Preliminary Request for Amendment #4 for the Wheatridge Wind Energy Facility

Prepared for

Prepared by

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
NextEra	NextEra Energy Resources, LLC
MW	megawatt
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
ORS	Oregon Revised Statutes
RFA 1	Request for Amendment 1
RFA 2	Request for Amendment 2
RFA 3	Request for Amendment 3
RFA 4	Request for Amendment 4

1.0 Introduction

NextEra Energy Resources, LLC (NextEra), on behalf of its wholly-owned subsidiary Wheatridge Wind Energy, LLC (Certificate Holder) is submitting a Request for Amendment 4 (RFA 4) to the Site Certificate for the Wheatridge Wind Energy Facility (Facility). The Facility is an approved, but not yet constructed, wind energy generation facility to be located in Oregon's Morrow and Umatilla counties, with a peak generating capacity of up to 500 megawatts (MW). The Facility, as approved, will consist of up to 292 wind turbines and related or supporting facilities. In RFA 4, the Certificate Holder is proposing five changes to the Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Certificate Holder is requesting that micrositing flexibility, already approved by the Energy Facility Siting Council (Council) for the Facility's wind turbines and related or supporting facilities, be extended to the solar energy generation facilities within the proposed Amended Site Boundary, also known as solar micrositing corridors. This is to allow flexibility in siting the solar energy generation components based on final solar module selection for optimization of the Facility's solar energy generation, in order to reflect technology available at the time of final design.

2.0 Background and Procedural History

The approved Facility is divided into two sections, Wheatridge West and Wheatridge East. Wheatridge West is located entirely within Morrow County, bisected by Oregon Highway 207, and

[1] Per OAR 345-001-0010 (32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to Site Certificate conditions. The solar micrositing corridor will consist of the area where the Facility's solar energy generating equipment, and related or supporting facilities, may be sited.

is approximately 5 miles northeast of Lexington and approximately 7 miles northwest of Heppner. Wheatridge East is located approximately 16 miles northeast of Heppner, and includes land in both Morrow and Umatilla counties. Wheatridge West and Wheatridge East are connected via a 230-kilovolt transmission line (Intraconnection Line). Additional related and supporting facilities to the Facility include an electrical collection system, collector substations, meteorological towers, communication and supervisory control and data acquisition systems, operations and maintenance buildings, new and improved access roads, and temporary construction areas.

The Council issued the Final Order for the Application for Site Certificate (ASC) for the Wheatridge Wind Energy Facility on April 28, 2017 (ODOE 2017a). The Site Certificate became effective on May 24, 2017. On June 14, 2017, the Certificate Holder filed a Request for Transfer of the Wheatridge Wind Energy Facility Site Certificate; this was Request for Amendment 1 (RFA 1). The First Amended Site Certificate for the Wheatridge Wind Energy Facility was approved in July 2017 and became effective August 11, 2017 (ODOE 2017b).

On May 18, 2018, the Certificate Holder submitted Request for Amendment 2 (RFA 2) and the Request for Amendment 3 (RFA 3) for the Facility[2]. RFA 2 proposes adding two energy storage locations (one in Wheatridge East and one in Wheatridge West). RFA 3 proposes increasing the maximum turbine height allowed. Both of these requests are pending before the Council; the Oregon Department of Energy (ODOE) staff, staff to the Council, issued the Proposed Orders on RFA2 and RFA3 on November 1, 2018. The Certificate Holder assumes that by the time of the Final RFA 4, and before RFA 4 appears before the Council, RFA 2 and RFA 3 will have been approved. Therefore, RFA 4 incorporates by reference the record from RFAs 2 and 3, along with the record of the ASC and RFA 1, to support approval of RFA 4. References to the Site Certificate in RFA 4 reflect the Site Certificate as amended by RFAs 2 and 3.

3.0 Amendment Required under OAR 345-027-0050 and Review Process under OAR 345-027-0051

Oregon Administrative Rules (OAR) 345-027-0050(4) requires a certificate holder to submit a request to amend its site certificate to 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 protected by Council standards;

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

[2] Energy storage and amending the range of turbine specifications were both included in the Preliminary Request for Amendment 2. However, due to the different amendment review paths for amending turbine specifications (Type B review process) and adding energy storage as a related and supporting facility (Type A review process) as approved by the Council at the June 2018 Council Meeting, RFA 2 was bifurcated and amending the range of turbine specifications became RFA 3.

(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 OAR 345-027-0050 (4)(a) and (c). The proposed changes could result in significant adverse impacts that the Council has not addressed in an earlier order, and they were not previously addressed by the Council for the Facility. Therefore, these changes require changes to the Facility description and new or modified conditions in the Site Certificate (see Attachment 1). Moreover, because the proposed changes are complex, they may generate additional interest from reviewing agencies or from the public. There will also be additional impacts that have not previously been reviewed. Due to these circumstances, the Certificate Holder assumes the review process for RFA 4 to be Type A. Pursuant to OAR 345-027-0051(2), the Type A review process consists of rules OAR 345-027-0059, OAR 345-027-0060, OAR 345-027-0063, OAR 345-027-005167, OAR 345-027-0071, and OAR 345-027-0075.

OAR 345-027-0060 outlines the requirements for a request for amendment:

OAR 345-027-0060 Preliminary Request for Amendment

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

The requirements of OAR 345-027-0060 are addressed in the following sections and document attachments.

4.0 Certificate Holder Information – OAR 345-027-0060(1)(a)

OAR 345-027-0060(1)(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.

4.1 Name of the Facility

Wheatridge Wind Energy Facility

4.2 Name and Mailing Address of the Certificate Holder

Jesse Marshall
Wheatridge Wind Energy, LLC
FEW/JB
700 Universe Blvd.
Juno Beach, FL 33408

4.3 Current Parent Company of Certificate Holder

Matt Handel
NextEra Energy Resources, LLC
FEW/JB
700 Universe Blvd
Juno Beach, FL 33408

4.4 Name and Mailing Address of the Individuals Responsible for Submitting the Request

Mike Pappalardo
Environmental Manager
NextEra Energy Resources, LLC
3256 Wintercreek Drive
Eugene, OR 97405
Mike.Pappalardo@nexteraenergy.com

5.0 Detailed Description of the Proposed Change – OAR 345-027-0060(1)(b)

OAR 345-027-0060(1)(b) A detailed description of the proposed change, including:

As noted above, the Certificate Holder proposes five changes to the approved Facility in RFA 4:

1. **Amend description of the Facility to include photovoltaic solar energy generation –** The Certificate Holder proposes to add solar energy generation to the existing Facility. This will allow the Certificate Holder to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy and energy source flexibility at the Facility. This will reduce the cost of energy and minimize resource impacts by balancing the energy supply and use of related or supporting facilities, including common transmission and operations infrastructure. Energy will be generated by one or more solar arrays consisting of photovoltaic panels mounted onto tracking modules and arranged in strings within the solar micrositing areas. Strings of modules will be connected by electrical collector lines to each other and to inverters that will convert the direct current power generated by panels to alternating current power. Transformers will be placed near the inverters to step up power to 34.5 kilovolts for underground transmission to the previously approved Wheatridge West Substation. The number of modules, configuration, dimensions, total energy generating capacity, and mounting system will be determined during final design and equipment selection/procurement.

2. **Amend the Site Boundary and add solar micrositing corridors –** The Certificate Holder proposes to add approximately 1,527 acres of land adjacent to the Approved Site Boundary (13,097 acres) in Wheatridge West. The Amended Site Boundary, which consists of 2,294 acres, provides for designated solar micrositing corridors at two locations that overlap with the approved wind micrositing corridor, along with two collector lines to connect the solar arrays to the substation. No turbines will be constructed outside of the wind micrositing corridors, and no solar modules will be constructed outside of the solar micrositing corridors. Exhibit C (in Attachment 2) provides a description of each solar micrositing corridor and the anticipated worst-case scenario impacts associated with RFA 4.

   Similar to the approved approach for wind turbines, the Certificate Holder requests permitting flexibility to allow a range of photovoltaic solar technologies and will stipulate the precise details and layout of solar energy generation and related energy storage during final design and engineering, prior to construction. There will be two designated solar micrositing corridors (Solar Array 1 to the north, and Solar Array 2 to the south). The solar micrositing corridors will also include private access roads, service roads, gates and security fence. The Certificate Holder is describing the full build-out potential at each solar micrositing corridor to analyze the greatest potential impact for each resource. Exhibit B (in Attachment 2) provides a detailed description of typical solar energy facility components.

3. **Increase maximum peak generating capacity for the facility by up to 150 megawatts (MW), for a total of 650 MW –** As part of integrating solar into the Facility, the Certificate Holder proposes to add up to 150 MW of photovoltaic solar energy generation to the 500 MW wind energy generation facility, for a total Facility generating capacity of up to 650 MW. Solar technology efficiency is improving rapidly, and as a result the Certificate Holder is requesting the flexibility to maximize the amount of MW generated within the solar micrositing corridors, depending on the technology available closer to the time of construction. Therefore, the actual solar energy generating capacity will depend on technology available at the time of construction, but will not exceed 150 MW and will not occupy more than 2,294 acres (the area of the solar micrositing corridors).

4. **Add distributed energy storage as a related or supporting facility for solar energy generation, new collector lines connecting the solar arrays and an expansion of an approved substation –**Together, solar energy generation and distributed energy storage can improve the operation of the electrical grid, reduce the need for additional generation, and provide additional options to meet peak energy demands. Batteries store power generated when the sun is shining, then dispatch the stored power to the grid to supplement dips in operation – such as when clouds roll in and temporarily reduce the sunlight reaching solar panels. The stored power can also be dispatched during periods of peak customer demand, such as summer afternoons and evening hours, when the sun is going down but the air conditioning or other electrical needs remain high.

   As noted above, the Facility is being developed with the goal of offering maximum efficiency and flexibility in its use of space and available technology. Therefore, the Certificate Holder

would like the option of using distributed energy storage facilities. Distributed energy storage facilities are located at multiple locations throughout the solar arrays. The distributed energy storage facilities proposed as part of RFA 4 will be an additional option along with the 20 and 30-MW energy storage sites described in RFA 2.

The previously approved substation within Wheatridge West will be used, but may have an increased footprint of up to 5 acres to accommodate additional equipment needed for additional energy generation. Two collector lines provide alternatives for the solar arrays to electrically connect generation facilities to the substation. The Certificate Holder will also use other approved related or supporting facilities, as necessary, to support solar energy generation at the Facility, such as the operations and maintenance building and new/improved access roads.

5. **Extend the construction completion deadline –** Extending the construction completion deadline by approximately 6 months, from May 24, 2023 to December 31, 2023 will provide additional construction time for the Facility, if needed, because of the increased number of Facility components.

5.1 Effect of Proposed Changes on the Project – OAR 345-027-0060(1)(b)(A)

OAR 345-027-0060(1)(b)(A) a description of how the proposed change affects the facility,

The Facility, as approved, is a wind energy generation facility. RFA 4 proposes to add solar energy generation, along with related or supporting facilities as described above and in Exhibits B and C (Attachment 2) of RFA 4. This will allow the Facility to respond to market needs, take advantage of available transmission capacity, and overcome the challenges posed by the intermittent nature of wind and solar energy. The wind turbines and solar energy generation will provide power to the same grid connection points, which provides the opportunity for optimal utilization of power generation and transmission capacities. Adding solar energy generation to the Facility will increase the maximum peak generating capacity for the Facility by up to 150 MW. This further supports Oregon's renewable energy law, which requires 50 percent of the state's electric power to be generated by renewable energy sources by 2040.

Although RFA 4 proposes to add to the Approved Site Boundary, these new areas are between areas of the Approved Site Boundary (see Exhibit C, Figure C-1, in Attachment 2). Therefore, because of their proximity to the Approved Site Boundary, the areas of Amended Site Boundary do not alter most of the various resource Analysis Areas that were reviewed in the ASC. In general, because of their proximity to the Approved Site Boundary, the new areas of the Site Boundary have similar habitat types, topography, and land uses to the Approved Site Boundary. Therefore, although there will be some additional impacts to certain resources resulting from the proposed modifications, these impacts will generally be similar in nature to those that have already been analyzed for the approved Facility.

RFA 4 proposes to add the option of distributed energy storage, in addition to the energy storage sites reviewed in RFA 2. Although distributed energy storage connects to the energy source

differently than the energy storage reviewed in RFA 2 (see Exhibit B in Attachment 2 for a more detailed description), the type (lithium-ion), structure, and how the batteries operate is essentially the same.

As detailed in the following sections and in the attachments, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for the Facility. Minimal edits to existing Site Certificate conditions are needed to reflect the additional solar generation facilities (see Attachment 1). Ultimately, the proposed changes will maximize the latest technology to minimize impacts, while supporting renewable energy production in the region and helping the state meet its renewable energy goals.

5.2 Applicable Laws and Council Rules – OAR 345-027-0060(1)(b)(B)

OAR 345-027-0060(1)(b)(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 (see Section 7). The Certificate Holder has reviewed and considered current local, state, and federal law as refenced throughout the exhibits in Attachment 2. No laws were identified that would prohibit the proposed changes requested in RFA 4. Compliance with applicable laws is integrated into the Site Certificate conditions, including conditions related to pre-construction habitat surveys, noise analysis, setback verification, the National Pollutant Discharge Elimination System 1200-C permit, consultation with the Oregon Department of Fish and Wildlife, Department of Geology and Mineral Industries, and the Federal Aviation Administration 7460-1 filings, among others. The proposed changes do not alter the Certificate Holder's ability to comply with the Site Certificate conditions for the Facility. Ultimately, although the Facility may be operated in a slightly different manner than previously approved by the Council as a result of RFA 4, substantial changes to the Site Certificate are not necessary to incorporate and meet Council standards and other applicable laws. Sections 6 and 7, and the exhibits provided in Attachment 2, further demonstrate how the proposed changes are consistent with the Council's previous findings for the Facility.

5.3 Location of the Proposed Change – OAR 345-027-0060(1)(b)(C)

OAR 345-027-0060(1)(b)(C) the specific location of the proposed change, and any updated maps and/or geospatial data layers relevant to the proposed change.

The Amended Site Boundary includes new solar micrositing corridors for an additional 1,527 acres added to the 13,097 acres of the Approved Site Boundary for a total Amended Site Boundary of 14,624 acres; this is an approximately 12 percent increase in the size of the Approved Site Boundary (see Exhibit C, Figure C-2, in Attachment 2). The solar micrositing corridors overlap in some areas with the existing wind micrositing corridors. No turbines will be constructed outside of the wind micrositing corridors and no solar arrays will be constructed outside of the solar

micrositing corridors. As noted in previous sections, the Certificate Holder is continuing to request micrositing flexibility for Facility components. As described in the Final Order on Amendment 1 (ODOE 2017b), "The certificate holder requested flexibility to locate components of the energy facility and its related and supporting facilities within a micrositing corridor to allow adjustment of the specific location of components, while establishing outer boundaries of potential construction for purposes of evaluating potential impacts." Exhibit C (Attachment 2) provides potential worst-case scenario impact calculations as relevant to the proposed changes. In compliance with Site Certificate Condition PRE-FW-01, impact calculations will be recalculated prior to construction based on the final design.

6.0 Division 21 Requirements – OAR 345-027-0060(1)(c)

OAR 345-027-0060(1)(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 exhibits in Attachment 2. Exhibit labeling reflects the requirements of OAR 345-021-0010. However, because this is a Request for Amendment rather than an Application for Site Certificate, not all exhibits are applicable (see Table 1)[3]. 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, Oregon Revised Statutes (ORS) 469.300 to 469.520.

Table 1. Division 21 List of Exhibits for RFA 4

Exhibits	
A – Applicant Information	M – Financial Analysis[1]
B – Project Description	O – Water Use
C – Property Location and Maps	P – Fish and Wildlife Habitats and Species[1]
D – Organizational Information	Q – Threatened and Endangered Species
E – Permits Needed for Construction and Operation	R – Scenic Resources
F - Property Ownership[1]	S – Historic, Cultural, and Archeological Resources[1]
G – Material Analysis	T – Recreation
H – Geologic Hazards Evaluation	U – Public Services
I – Soil Evaluation	V – Waste Management
J – Wetlands and Other Jurisdictional Waters	W – Site Restoration

[3] Exhibits not applicable to RFA 4 are Exhibit N – Non-generating Facility Information, Exhibit Y – Carbon Dioxide Emissions, Exhibit Z – Cooling Towers, Exhibit AA – Electric and Magnetic Fields, and Exhibit BB – Other Information, and Exhibit DD –Specific Standards.

Exhibits	
K – Land Use[1]	X – Noise[1]
L – Protected Areas	CC – Additional Statutes, Rules, and Ordinances
1. Indicates this exhibit will be part of a supplemental submittal.	

7.0 Site Certificate Revisions – OAR 345-027-0060(1)(d)

OAR 345-027-0060(1)(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 (to be provided in supplemental submittal). Generally, the proposed changes to language in the Site Certificate include amending the Facility description to include solar energy generation and related facilities and amending existing conditions that apply to specific Facility components rather than the Facility as whole, to include solar energy generation facilities, as applicable.

8.0 Other Standards and Permits – OAR 345-027-0060(1)(e)

OAR 345-027-0060(1)(e) A list of the Council standards and all 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 345-027-0075(2).

The 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 wind or solar generating facilities. Similarly, inapplicable provisions of Division 24 (e.g., standards applicable to gas plants, gas storage, non-generating facilities) are not discussed.

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 take advantage of market demand and technological advances. Table 2 identifies the Council standards and laws reviewed as part of RFA 4, their applicability, and the Site Certificate conditions that govern Facility compliance for each standard.

Table 2. Standards and Laws Relevant to Proposed Amendment

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
OAR 345-022-0010 Organizational Expertise	Applicable and complies. The Wheatridge management team and the NextEra family of companies have deep regional expertise, derived over years of successfully permitting and operating hundreds of MWs of wind energy projects in the Oregon and hundreds of MW of solar throughout the U.S. See Exhibit D for accompanying analysis.	GEN-OE-01: Responsibility of non-compliance GEN-OE-02: Report of site certificate violations GEN-OE-03: Report of change in corporate structure GEN-OE-04: Compliance with laws for battery disposal & transport PRE-OE-01: Notification of contractor identities PRE-OE-02: Notification of construction manager PRE-OE-03: Compliance of construction workers PRE-OE-04: Notification of non-surveying activities PRE-OE-05: Proof of aggregate source and county permits PRE-OE-06: Proof of third party approvals and permits GEN-GS-01: Commencement of construction GEN-GS-02: Completion of construction GEN-GS-03: Compliance during all phases GEN-GS-04: Permission to construct GEN-GS-05: Notification of environmental impacts GEN-GS-06: Inclusion of all representations GEN-GS-07: Vegetation restoration GEN-GS-08: Construct to prioritize human safety GEN-GS-09: Notification of foundation changes GEN-GS-10: Notification of other geological observations GEN-GS-11: Notification of new owners OPR-GS-01: Submission of legal description
OAR 345-022-0020 Structural Standard	Applicable and complies. See Exhibit H, which includes updated Facility information regarding climate change and resiliency.	GEN-SS-01: Compliance with building codes PRE-SS-01: Geological investigation reporting PRE-SS-02: Investigation of active faults PRE-SS-03: Investigation of slope instability PRE-SS-04: Investigation of loess soil
OAR 345-022-0022 Soil Protection	Applicable and complies. Additional permanent and temporary disturbance will occur as a result of construction of the solar arrays. See Exhibits C and I.	PRE-SP-01: Spill Prevention, Control, and Countermeasure construction plans PRE-SP-02: Restoration of agricultural soils PRE-SP-03: Septic system permitting OPR-SP-01: Prevention of erosion, soil disturbance CON-SP-01: Erosion and Sediment Control Plan CON-SP-02: Best management practices to be included in Erosion and Sediment Control Plan PRO-SP-01: Submission of operational Spill Prevention, Control, and Countermeasure
OAR 345-022-0030 Land Use	Applicable and complies. See Exhibit K which includes a	GEN-LU-01: Compliance with county setbacks GEN-LU-02: County road permits and standards

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
	Goal 3 Exception for solar on high-value farmland. The Facility, as proposed, will not force a significant change in accepted farm practices, nor will it significantly increase the cost of farm practices.	GEN-LU-03: Meteorological tower requirements GEN-LU-04: Usage of minimum land area GEN-LU-05: Blending with natural surroundings GEN-LU-06: Micro siting to minimum road/highway setbacks GEN-LU-07: Blending of operations and maintenance building GEN-LU-08: Best management of access roads GEN-LU-09: Notification of project infrastructure locations GEN-LU-10: Delivery of annual report PRE-LU-01: Obtain local permitting PRE-LU-02: Obtain Conditional Use Permit PRE-LU-03: Preparation of Weed Control Plan PRE-LU-04: Recording of a Covenant Not to Sue for Morrow County PRE-LU-05: Consultation with landowners PRE-LU-06: Identification of construction traffic concerns PRE-LU-07: Obtaining county zoning permits PRE-LU-08: Installation of gates and signs to private access roads PRE-LU-09: Recording of a Covenant Not to Sue for Umatilla County OPR-LU-01: Submission of as-built surveys for construction phases OPR-LU-02: Restoration of disturbed areas OPR-LU-03: Completion of final retirement plan OPR-LU-04: Preparation of Operating and Facility Maintenance Plan OPR-LU-05: Submission of as-built changes OPR-LU-06: Retirement restoration activities CON-LU-01: Minimization of footprint CON-LU-02: Installation of bird deterring devices CON-LU-03: Installation of underground cable system
OAR 345-022-0040 Protected Areas	Applicable and complies. Visual, noise and traffic impacts were reviewed for the proposed changes. The proposed changes do not modify the Council's previous finding for protected areas. See Exhibit L.	N/A

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
OAR 345-022-0050 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. See Exhibits M and W.	GEN-RF-01: Prevention of non-restorable site PRE-RF-01: Letter of credit to restore site to non-hazardous condition PRE-RF-02: Letter of credit naming State as payee RET-RF-01: Compliance with retirement plan OPR-RF-01: Evidence of monthly inspections of battery storage and insurance for high loss catastrophic events RET-RF-02: Retirement of facility upon cessation of activities
OAR 345-022-0060 Fish and Wildlife Habitat	Applicable and complies. The land added into the Amended Site Boundary is in areas surveyed for fish and wildlife habitat as documented in Exhibit P. The Habitat Mitigation Plan will be finalized after final design to account for Facility impacts per Condition PRG-FW-04. See Exhibit P.	GEN-FW-01: Speed limit requirement GEN-FW-02: Compliance with Avian Power Line Interaction Committee designs PRE-FW-01: Confirmation of habitat categories, nests via habitat survey PRE-FW-02: Implementation of Wildlife Monitoring and Mitigation Plan PRE-FW-03: Flagging of environmentally sensitive areas PRE-FW-04: Approval of Habitat Mitigation Plan PRE-FW-05: Approval of Revegetation Plan CON-FW-01: Cease of construction during mule deer winter range CON-FW-02: Buffer zones for nest sites CON-FW-03: Environmental training by professional CON-FW-04: Appointment of on-site environmental inspector
OAR 345-022-0070 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. See Exhibit Q.	PRE-TE-01: Determination of Washington ground squirrel boundaries PRE-TE-02: Implementation of Wildlife Monitoring and Mitigation Plan for Washington ground squirrels PRE-TE-03: Avoidance of Laurent's milkvetch impacts
OAR 345-022-0080 Scenic Resources	Applicable and complies. The ASC reviewed visual impacts for the project on Scenic Resources for turbines up to 525 feet. The maximum height of the solar panels will be 16 feet at full tilt; the potential impacts from the solar arrays on Scenic Resources are analyzed in Exhibit R. The proposed changes do not	GEN-SR-01: Reduction of lighting facility visual impacts GEN-SR-02: Minimization of visual impacts

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
	modify the Council's previous finding for Scenic areas.	
OAR 345-022-0090 Historic, Cultural and Archaeological Resources	Applicable and complies. Surveys were conducted for the Amended Site Boundary and identified resources will be protected per Site Certificate conditions and an Unanticipated Discovery Plan. See Exhibit S.	PRE-HC-01: Submission of final design PRE-HC-02: Marking of buffer areas PRE_HC-03: Training by qualified archeologist CON-HC-01: Flagging of 200-foot avoidance buffer CON-HC-02: Work cease due to historical find
OAR 345-022-0100 Recreation	Applicable and complies. See Exhibit T. The proposed changes do not modify the Council's previous finding for recreation areas.	N/A
OAR 345-022-0110 Public Services	Applicable and complies. Adding solar energy generation facilities does not alter the basis for the Council's prior findings for public services because they are in the same service areas reviewed in the ASC and peak construction employment and traffic estimates remain the same. The proposed changes do not alter the Certificate Holder's ability to comply with existing Site Certificate conditions. See Exhibit U.	GEN-PS-01: Coordination with solid waste handler GEN-PS-02: Installation of security measures GEN-PS-03: Fire prevention and response training GEN-PS-04: 100-foot vegetation free zone around battery storage systems PRE-PS-01: Preparation of Traffic Management Plan PRE-PS-02: Road Use Agreements with counties PRE-PS-03: Access road and private road modification approvals PRE-PS-04: Submission of Notice of Proposed Construction of Alteration PRE-PS-05: Preparation of Emergency Management Plan PRE-PS-06: Development of health and safety plan PRE-PS-07: Assurance of first aid/CPR/AED personnel CON-PS-01: Waste management plan protocols CON-PS-02: Establish on-site security CON-PS-03: Assurance of fall, high angle, confined space trained personnel CON-PS-04: Usage of concrete pads, nonflammable ground cover CON-PS-05: Maintenance of non-vegetated area PRO-PS-01: Fall protection/tower rescue training PRO-PS-02: Submission of site plan to fire protection officials PRO-PS-03: Assurance of current first aid/CPR/AED personnel OPR-PS-01: Discharge of wastewater OPR-PS-02: On-site well water usage

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
		OPR-PS-03: Implementation of waste management plan OPR-PS-04: Current contact information for personnel
OAR 345-022-0120 Waste Minimization	Applicable and complies. The proposed changes are not anticipated to substantially increase the amount of solid waste and wastewater generated by the Facility. See Exhibit V.	PRE-WM-01: Minimum waste management plan requirements PRE-WM-02: Confirmation of no surface/ground/drinking water impacts CON-WM-01: Requirements of off-site soil disposal CON-PS-01: Construction Waste Management Plan
OAR 345-024-0010 Public Health and Safety Standards for Wind Energy Facilities	Not Applicable. The Council previously found the standards, specific to wind facilities, were met. There will be no changes to the approved wind energy facilities as part of RFA 4.	GEN-WF-01: Following handling instructions GEN-WF-02: Notification of accidents/failures CON-WF-01: Installation of step-up transformers CON-WF-02: Maintenance of self-monitoring devices OPR-WF-01: Assurance of operation security fencing and gates PRE-PS-04: FAA and ODA aeronautical studies and determinations.
OAR 345-024-0015 Siting Standards for Wind Energy Facilities	Not Applicable. The Council previously found the standards, specific to wind facilities, were met. There will be no changes to the approved wind energy facilities as part of RFA 4. The Facility, as proposed, is being designed to reduce cumulative adverse environmental effects.	N/A
OAR 345-024-0090 Transmission Lines	Not Applicable. No changes are proposed to the approved 230-kV intraconnection line and no new transmission lines under Council jurisdiction are proposed.	GEN-GS-12: Specification of corridor
OAR 340-035-0035 Noise	Applicable and complies. See Exhibit X. Noise analysis is being completed as part of wind and solar micrositing to minimize noise impacts.	PRE-NC-01: Final facility design noise analysis and noise waiver if applicable. CON-NC-01: Measure to reduce noise impacts during construction OPR-NC-01: NRO mode turbines operating noise level documentation. OPR-NC-02: Certificate Holder to maintain a noise complaint response system. OPR-NC-03: Certificate holder will provide a monitoring plan for noise levels in response to a noise complaint.

Standard	Applicability and Compliance	Related Site Certificate Condition(s)
Removal-Fill Law	Applicable. See Exhibit J. A removal-fill permit is not needed for the Facility because the Facility will not temporarily or permanently impact waters of the state.	N/A
Water Rights	Applicable. See Exhibit O. The increase in water volume from the proposed changes will be negligible in comparison to other land uses and the water sources remain the same as for the approved Facility.	N/A

9.0 Property Owners Located within or Adjacent to the Site of the Facility (OAR 345-027-0060(1)(f))

A revised property owner list, to be included in Exhibit F, will be provided in a supplemental submittal.

10.0 Conclusion

Based on this submittal and attached exhibits in Attachment 2, the Council can find that 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, with all other Oregon statutes and administrative rules applicable to the amendment of the Site Certificate that are within the Council's jurisdiction, and that 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.

11.0 References

ODOE 2017a. Final Order in the Matter of the Application for a Site Certificate for the Wheatridge Wind Energy Facility. April 2017.

ODOE. 2017b. Final Order in the Matter of the Request for Transfer (Amendment #1) for the Wheatridge Wind Energy Facility. July 2017.

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Attachment 1. Redlined Site Certificate

(Supplemental Submittal)

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Attachment 2. Division 21 Exhibits

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Exhibit A

Information About Applicant

Wheatridge Wind Energy Facility
November 2018

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

TETRA TECH

Tetra Tech, Inc.

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List of Attachments

Acronyms and Abbreviations

Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
NextEra	NextEra Energy Resources, LLC
OAR	Oregon Administrative Rule

1.0 Introduction

As part of Request for Amendment 4 to the Wheatridge Wind Energy Facility (Facility) Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide an integrated, renewable energy facility with both wind and solar energy generation and energy storage (see Exhibit B for a detailed description). The Energy Facility Siting Council (Council) previously approved construction of a 500-megawatt wind energy facility to include up to 292 wind turbines and related or supporting facilities.

Exhibit A provides contact information for the Certificate Holder and other entities assisting in the permitting process, as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(a). This exhibit provides evidence to support a demonstration of compliance with the Organizational Expertise standard of OAR 345-022-0010, which is addressed in detail in Exhibit D of this request for amendment.

2.0 Applicant Contact Information – OAR 345-021-0010(1)(a)(A)

OAR 345-021-0010(1)(a) Information about the applicant and participating persons, including:

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

Name and Address of Site Certificate Holder

Jesse Marshall

Wheatridge Wind Energy, LLC

FEW/JB

700 Universe Blvd.

Juno Beach, FL 33408

Contact Persons other than Applicant:

Matt Handel

NextEra Energy Renewables, LLC

FEW/JB

700 Universe Blvd.

Juno Beach, FL 33408

Mike Pappalardo

Environmental Manager

NextEra Energy Resources, LLC

3256 Wintercreek Drive

Eugene, OR 97405

Mike.Pappalardo@nexteraenergy.com

(541) 302-1345

Carrie Konkol

Senior Project Manager

Tetra Tech

1750 SW Harbor Way, Suite 400

Portland, OR 97201

Carrie.Konkol@tetratech.com

(503) 721-7225

3.0 Other Participants – OAR 345-021-0010(1)(a)(B)

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

No other participants are anticipated at this time, with the exception of potential third party permits that would be obtained by the construction firm selected to build the Facility. The Certificate Holder anticipates that these third-party permits may include permits for obtaining aggregate and other construction materials, transporting materials to the site, and other building-related permits that are typically obtained immediately prior to construction activities. The Certificate Holder anticipates that these permits would meet the facility standards adopted by the Council.

4.0 Limited Liability Company Information – OAR 345-021-0010(1)(a)(H)

OAR 345-021-0010(1)(a)(H) If the applicant is a limited liability company, it shall give:

(i) The full name, official designation, mailing address, email address and telephone number of the officer responsible for submitting the application;

(ii) The date and place of its formation;

(iii) A copy of its articles of organization and its authorization for submitting the application; and

(iv) In the case of a limited liability company not registered in Oregon, the name and address of the resident attorney-in-fact in this state and proof of registration to do business in Oregon.

The Certificate Holder is a Delaware limited liability company, and was recently acquired by NextEra Energy Resources, LLC (NextEra) from Swaggart Wind Power, LLC. Swaggart Wind Power, LLC sold the Facility, including the ownership of all membership interests in Wheatridge Wind Energy, LLC, to Wheatridge Wind Holdings, LLC, an indirect subsidiary of NextEra. The sale closed on April 5, 2017, at which time the Certificate Holder became a wholly-owned, indirect subsidiary of NextEra.

The Certificate Holder's articles of organization are provided in Attachment A-1. Proof of registration to do business in Oregon is provided in Attachment A-2.

5.0 Other Affiliations – OAR 345-021-0010(1)(a)(C) through (G)

The Certificate Holder is a wholly-owned, indirect subsidiary of NextEra. The full name and address of NextEra are provided in Section 2.0.

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Attachment A-1. Articles of Organizations

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Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF FORMATION OF "WHEATRIDGE WIND HOLDINGS, LLC", FILED IN THIS OFFICE ON THE SEVENTH DAY OF MARCH, A.D. 2017, AT 12:41 O`CLOCK P.M.

Jeffrey W. Bullock, Secretary of State

6339411 8100
SR# 20171635044

Authentication: 202154029
Date: 03-07-17

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 12:41 PM 03/07/2017
FILED 12:41 PM 03/07/2017
SR 20171635044 - File Number 6339411

STATE OF DELAWARE

LIMITED LIABILITY COMPANY CERTIFICATE OF FORMATION OF

WHEATRIDGE WIND HOLDINGS, LLC

The undersigned, an authorized natural person, for the purpose of forming a limited liability company under the provisions and subject to the requirements of the laws of the State of Delaware (including Chapter 18, Title 6 of the Delaware Code and the acts amendatory thereof and supplemental thereto, and known, identified, and referred to as the "Delaware Limited Liability Company Act"), hereby certifies that:

FIRST: The name of the limited liability company (hereinafter called the "limited liability company") is **Wheatridge Wind Holdings, LLC.**

SECOND: The address of the registered office and the name and address of the registered agent of the limited liability company required to be maintained by Section 18-104 of the Delaware Limited Liability Company Act are:

NextEra Registered Agency, LLC
501 Carr Road, Suite 100
Wilmington, DE 19899

Executed on March 7, 2017.

Melissa A. Plotsky

By: Melissa A. Plotsky
An Authorized Person

STATE OF DELAWARE

LIMITED LIABILITY COMPANY
CERTIFICATE OF FORMATION
OF

WHEATRIDGE WIND HOLDINGS, LLC

The undersigned, an authorized natural person, for the purpose of forming a limited liability company under the provisions and subject to the requirements of the laws of the State of Delaware (including Chapter 18, Title 6 of the Delaware Code and the acts amendatory thereof and supplemental thereto, and known, identified, and referred to as the "Delaware Limited Liability Company Act"), hereby certifies that:

FIRST: The name of the limited liability company (hereinafter called the "limited liability company") is **Wheatridge Wind Holdings, LLC.**

SECOND: The address of the registered office and the name and address of the registered agent of the limited liability company required to be maintained by Section 18-104 of the Delaware Limited Liability Company Act are:

NextEra Registered Agency, LLC
501 Carr Road, Suite 100
Wilmington, DE 19899

Executed on March 7, 2017.

Melissa A. Plotsky

By: Melissa A. Plotsky
An Authorized Person

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Attachment A-2. Qualification to Conduct Business in Oregon

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Corporation/Limited Liability Company - Information Change

Secretary of State - Corporation Division - 255 Capitol St. NE, Suite 151 - Salem, OR 97310-1327 - http://www.FilingInOregon.com - Phone: (503) 986-2200
Please Type or Print Legibly in **Black** ink. Attach Additional Sheet if Necessary. Fax: (503) 378-4381

FILED
APR 11 2017
OREGON
SECRETARY OF STATE

REGISTRY NUMBER: 60831394

ENTITY TYPE: ○ DOMESTIC ☒ FOREIGN

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public record. We must release this information to all parties upon request and it will be posted on our website.

For office use only

1. **NAME OF CORPORATION OR LIMITED LIABILITY COMPANY:**

Wheatridge Wind Energy, LLC

Complete only the sections that you are updating.

2. **BUSINESS ACTIVITY**

3. **PRINCIPAL PLACE OF BUSINESS: (Street Address)**

700 Universe Blvd., Attn: Corp. Gov.

Juno Beach, FL 33408

4. **THE REGISTERED AGENT HAS BEEN CHANGED TO:**

Corporation Service Company

5. **REGISTERED AGENT'S PUBLICLY AVAILABLE ADDRESS:**
Must be an Oregon Street Address, which is identical to the registered agent's office.

1127 Broadway Street NE, Suite 310, Salem, OR 97301

6. **ADDRESS WHERE THE DIVISION MAY MAIL NOTICES:**

700 Universe Blvd., Attn: Corp. Gov.

Juno Beach, FL 33408

7. **THE NEW REGISTERED AGENT HAS CONSENTED TO THIS APPOINTMENT.**

8. **THE STREET ADDRESS OF THE NEW REGISTERED OFFICE AND THE BUSINESS ADDRESS OF THE REGISTERED AGENT ARE IDENTICAL.**

The entity has been notified in writing of this change.

9. **NAME(S) AND ADDRESS(ES)OF CORPORATE OFFICERS OR LLC MEMBERS/MANAGERS**

Corporations list the name and address of one President and one Secretary (ORS 60.787, ORS 65.787, ORS 62.455, ORS 554.315).
Limited Liability Companies list the name and addresses of the managers for a manager-managed limited liability company or the name and address of at least one member for a member-managed limited liability company (ORS 63.787). Please attach a separate sheet of paper if needed.
If making changes to this section, list all current names and addresses. This replaces what is currently on the record.

PRESIDENT OR **OWNER(S) (MEMBERS):** (Names and Addresses)

Wheatridge Wind Holdings, LLC

700 Universe Blvd., Attn: Corp. Gov.

Juno Beach, FL 33408

SECRETARY OR **MANAGER(S):** (Names and Addresses)

10. **EXECUTION:** By my signature, I declare as an authorized signer, that this filing has been examined by me and is, to the best of my knowledge and belief, true, correct and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment or both.

SIGNATURE:	PRINTED NAME:	TITLE:
	W. Scott Seeley	Asst. Secretary

CONTACT NAME: (To resolve questions with this filing)

Amy Lowe

PHONE NUMBER: (Include area code)

561-691-7259

FEES

No Processing Fee

Free copies are available at FilingInOregon.com using the Business Name Search program.

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Exhibit B

Project Description and Schedule

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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List of Attachments

Acronyms and Abbreviations

AC	Alternating current
DC	Direct current
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
kV	Kilovolt
MW	Megawatts
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statutes
RFA 4	Request for Amendment #4

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. As part of Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

Exhibit B provides the information required by Oregon Administrative Rules (OAR) 345- 021-0010(1)(b) in support of RFA 4. Similar to the approved approach for wind turbines, the Certificate Holder is requesting to permit a range of photovoltaic technology in order to preserve permitting flexibility and will stipulate the precise details of solar energy generation and related or supporting facilities including distributed energy storage during final design and engineering prior to construction. Therefore, Exhibit B provides a representative description of components and accompanying analysis for the maximum footprint or buildable area (for the solar arrays) within the proposed Amended Site Boundary, also known as solar micrositing corridors, to address the greatest potential impact. The information summarized in this exhibit and described in RFA 4 demonstrates that the Facility, as proposed, can be designed, engineered, constructed, operated, and retired in a manner that satisfies the applicable Energy Facility Siting Council (Council) standards. The proposed changes in RFA 4 do not alter the Certificate Holder's ability to comply

[1] Per OAR 345-001-0010(32) "Micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

with the Council's earlier findings and approved conditions in the previously amended site certificate.

2.0 Overview of Major Components and Systems – OAR 345-021-0010(b)(A)(i)(ii); (C)

Information about the proposed facility, construction schedule and temporary disturbances of the site, including:

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

(i) The nominal electric generating capacity and the average electrical generating capacity, as defined in ORS 469.300.

The Facility, as approved, has a nominal electric generating capacity of up to 500 MW and an average electric generating capacity of up to 167 MW. RFA 4 proposes to add solar energy generation to the Facility, consisting of up to 150 MW of nominal and average electric generating capacity. Therefore, the Facility, as proposed would have a nominal electric generating capacity of 650 MW, with wind energy generation up to 500 MW and solar energy up to 150 MW. As defined in Oregon Revised Statutes (ORS) 469.300, the average electric generating capacity of the Facility would be up to 317 MW.

(ii) Major components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy.

The solar energy will be generated by using multiple arrays of photovoltaic solar panels connected to electrical infrastructure. (The term "array" refers to panels wired in series and in parallel.) Solar panels generate electricity by means of a photoelectric 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 photovoltaic solar panels, known in the industry as modules, will be installed to form module blocks. Attachment B-1 provides a diagram of how a solar facility works and an example pictures of module blocks.

The solar arrays will be composed of a combination of solar modules, tracker systems, posts, and related electrical equipment. The Facility would consist of two areas of arrays: Solar Array 1 and Solar Array 2. As noted in the request document for RFA 4, because technology is changing rapidly, the Certificate Holder requests flexibility to use the most up-to-date technology at the time of the Facility's final design and procurement in order to maximize solar energy generation within the solar micrositing corridors. Thus, the final solar array configuration, solar modules, and associated equipment have not yet been determined. Therefore, the following description of major components is based on the best available design information at this time. The Certificate Holder is analyzing the full build-out potential in each solar micrositing corridor to analyze the greatest potential impact for each resource. The major components are anticipated to stay the same, but

their size, arrangement, and quantity of solar arrays will likely change. "Major components" are considered all components necessary in the solar micrositing corridors for solar energy generation from the solar arrays (i.e., the equipment necessary to capture and then convert the energy for conveyance from the site).

2.1 Photovoltaic Modules and Racking

Each solar module will measure approximately 6 feet by 3 feet, and will be placed on a nonspecular, galvanized steel rack. Each set of approximately 70 racked modules will be mounted approximately 5 feet off the ground on a single-axis tracker that rotates 60 degrees to the east and west. Each tracker will be supported by steel posts; post depth will vary depending on soil conditions, but the posts are typically placed 8 feet below the surface. If soil conditions require it, concrete foundations will be used. Although it is unlikely that concrete foundations will be required, for purposes of this application, impact calculations assume the greatest impact scenario of using concrete foundations for all posts. Approximately 40,000 posts will be installed. Post locations will be determined by the ground coverage ratio. The planned ground coverage ratio is 30 percent, meaning that the area occupied by the panels (when tilted horizontally) will be 30 percent of the total area within the fence line of the solar array area. This will minimize the amount of shading from one module row onto the next. The maximum of height of the modules at full tilt will be approximately 16 feet.

2.2 Electrical Infrastructure

Other onsite equipment will include overhead and buried conduits, inverters, combiners, and transformers:

- **Combiner Boxes and Conduits** – The current produced by solar modules is in the form of direct current (DC). Within each module block, several DC electrical conduits (cables on the back of the modules) will aggregate electricity produced from each of the modules into a combiner box. Approximately 18 combiner boxes will be located throughout each module block for a total of approximately 740 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.
- **Inverters** – The photovoltaic 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 current must be converted into alternating current (AC) power, and inverters serve this function. The conversion is accomplished by rapidly switching the DC power supply; by varying the length of time that the switch is on, as well as the polarity, the inverter creates the positive and negative swells of an AC wave. This waveform is then smoothed with an output filter. Inverters employ several advanced control systems, switching algorithms, and ancillary services for both the input and output stages. For the input stage, the inverters can manipulate the DC voltage to ensure maximum power harvest of input, and on the output various sensors ensure that AC power production is in accordance with regulatory requirements. The Facility will use approximately 41 inverters.

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

- **Transformers –** The inverter AC output voltage (480 volts) will be stepped up to a higher-voltage (34.5 kilovolts [kV]) by pad-mounted transformers designed to integrate with the inverter. There will be approximately 41 transformers that are co-located with the inverters. The transformers are anticipated to be mounted on concrete pads. From the inverters, the AC electricity is aggregated via an underground 34.5-kV cables to the collector transmission lines, which will be either above or underground (see Section 3).

2.3 Facility Site Plan – OAR 345-021-0010(b)(A)(iii)

(iii) A site plan and general arrangement of buildings, equipment and structures.

The site plan and general arrangement of the solar array is illustrated on Figure C-2 of Exhibit C.

2.4 Facilities for Chemical Storage, Spill Containment Systems, and Fire Prevention and Control – OAR 345-021-0010(b)(A)(iv)(v)

(iv) Fuel and chemical storage facilities, including structures and systems for spill containment

A spill prevention control and countermeasure plan will be put in place prior to construction. 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. The generator step-up transformer will have a concrete catchment system sized at approximately 1.25 times the amount of oil inside the transformer.

The Certificate Holder proposes a distributed energy storage system (see Section 3), which will contain chemical electrolyte. Lithium-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 processer, and serves as leak-proof secondary containment. Modules are placed in anchored racks within the steel containers. Although leaks from the modules are very unlikely because any leak would require failure of the individual cells as well as the sealed module, any material that might leak from the cell into the module and then to the floor of the container would easily be contained within the container.

(v) Equipment and systems for fire prevention and control.

The greatest risk of fire would occur during construction of the Project, when welding and metal cutting for foundation rebar frames would 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 would include requirements to conduct welding or metal cutting only in areas cleared of vegetation, and to keep emergency firefighting equipment on-site when potentially hazardous operations are taking place.

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.

The Facility equipment will meet the standards of the National Electrical Code and the Institute of Electrical and Electronics Engineers, and will not pose a significant fire risk. Facility roads will be sufficiently sized for emergency vehicle access in accordance with the most updated Oregon Fire Code (Section 503 and Appendix D Fire Apparatus Access Roads), last updated in 2014 (or the most updated Fire Code at time of construction). Specifically, internal roads at the solar array sites will be all-weather, compacted gravel and approximately 20 feet wide, with an internal turning radius of 28 feet. These roads will also have less than a 10 percent grade, or a similar profile, depending on exact siting.

Oregon Fire Code 605.12 provides the code for ground-mounted solar photovoltaic power systems. Oregon Fire Code 605.12.2 requires a gravel base or other "non-combustible base acceptable to the fire official" to be installed and maintained under and around a ground-mounted solar photovoltaic power system unless a waiver is obtained. The Certificate Holder is requesting that this requirement be amended for the solar generation areas of the Facility because replanting the area and avoiding extensive use of gravel is more consistent with the Council's Wildlife, Soil Protection, and Land Use standards.

Where the ground is relatively level and grading is not required, the area where the solar array, roads and other site facilities will be left intact and mowed to a height no more than 3 inches. Grading will be done only in the areas where the elevation would need to be changed to accommodate the tracker/racking system tolerances, site drainage, roads, laydown areas and foundations. The minimal grading approach will help preserve the underground root structure, topsoil nutrients, seed base and pre-construction site hydrology. The organic matter that remains after mowing would remain within the construction area (except in trenches and under equipment foundations).

For roadways, access ways, and areas where concrete foundations are used for inverter equipment, substations, drainage facilities, and other structures, grading will be required. Grading will consist of the excavation and compaction of earth to meet the design requirements. Grading within the solar field will match existing grades as close as possible. Some existing contours will need to be smoothed out for access purposes, but the macro-level topography and storm water drainage would be similar to pre-construction conditions. To the extent practical, grading of an area will take place shortly before trenching and post installation are ready to begin in order to minimize the area of open, uncovered ground present at any one time during construction.

The site will be maintained to allow preexisting vegetation to continue growing to the extent such conditions would not interfere with any required post-construction operational requirements. The portions of the solar arrays that will be graded will be replanted with a low-growing mix of grasses. The site will be mowed as needed for fire safety requirements and to keep vegetation from interfering with operations and maintenance activities. The site will be treated for weeds using a combination of mechanical methods and herbicides.

The portions of the solar arrays that will be graded are expected to result in a balanced cut-and-fill quantity of earthwork to maintain the existing conditions to the extent practical for the protection of the equipment and facilities. Fill will be compacted as necessary, and appropriate dust abatement measures implemented. These measures may include restriction of vehicle speeds, watering of active areas, watering of stockpiles, watering on roadways, track-out control at site exits, and other measures. The Certificate Holder uses this approach on ground-mounted solar photovoltaic facilities throughout the U.S. and has not found it to increase fire risk.

2.5 Thermal Power Plants – OAR 345-021-0010(b)(A)(vi)

(vi) For thermal power plants:

(I) A discussion of the source, quantity and availability of all fuels proposed to be used in the facility to generate electricity or useful thermal energy.

(II) Process flow, including power cycle and steam cycle diagrams to describe the energy flows within the system.

(III) Equipment and systems for disposal of waste heat.

(IV) The fuel chargeable to power heat rate.

The changes proposed in RFA 4 do not include the development of a thermal power plant. Therefore, this section is not applicable.

2.6 Surface Facilities Related to Underground Gas Storage – OAR 345-021-0010(b)(A)(vii)

(vii) For surface facilities related to underground gas storage, estimated daily injection and withdrawal rates, horsepower compression required to operate at design injection or withdrawal rates, operating pressure range and fuel type of compressors.

The changes proposed in RFA 4 do not include the development of underground gas storage. Therefore, this section is not applicable.

2.7 Facilities Related to the Storage of Liquefied Natural Gas – OAR 345-021-0010(b)(A)(viii)

(viii) For facilities to store liquefied natural gas, the volume, maximum pressure, liquefication and gasification capacity in thousand cubic feet per hour.

The changes proposed in RFA 4 do not include the development of storage of liquefied natural gas. Therefore, this section is not applicable.

3.0 Description of Related or Supporting Facilities – OAR 345-021-0010(b)(B)

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

The additional related or supporting facilities proposed in RFA 4 include: distributed energy storage integrated into the solar energy facility, 34.5-kV collector lines to convey the electricity to the substation, an expansion of an approved substation, and service roads and gates. Figure C-2 in Exhibit C shows the layout of these supporting facilities within the Amended Site Boundary. Related or supporting facilities previously approved as part of the wind energy generating facility, including a battery energy storage facility and the Wheatridge West substation, may also be used in support of solar energy generation. The additional related or supporting facilities are described below.

- **Collection System** – From the transformers, the AC electricity is aggregated via underground 34.5-kV cables to the 34.5-kV collector line outside of the solar micrositing corridors, which will be either aboveground or underground, and will connect the electrical output of the Facility to the Facility substation. Underground AC electrical cables will be buried to a minimum of 3 feet. Overhead collector lines will be supported by a wooden or steel monopole structure. Each support pole will be buried approximately 6 feet in the ground, and will extend to a height of approximately 60 feet above ground. The support poles will be spaced 100 to 200 feet apart, depending on specific siting conditions. The Certificate holder would like the flexibility to use either or both collector corridors identified on Figure C-2 of Exhibit C.
- **Distributed Energy Storage –** Distributed energy storage will consist of up to 41 sites of lithium-ion batteries in concrete containers throughout the solar array areas. Each container will measure up to 12 feet wide, 36 feet long, and 10 feet tall. Lithium-ion battery systems are modular systems. Each module contains multiple smaller battery cells, each measuring up to 3.2 by 7 centimeters. 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 processer, and serves as leak-proof secondary containment. Modules are placed in anchored racks within the concrete containers; typically, each rack houses 12 battery modules along with a switchgear assembly. Cooling units will be placed either on top of the concrete containers or along the side.
- **Collector Substation Expansion** – In order to accommodate the additional electrical equipment needed to handle the power generated by the proposed solar generating facility, one of the two collector substations approved in Wheatridge West (by Strawberry Lane) will occupy up to an additional 5 acres, for a maximum substation total footprint of 10 acres. The expanded substation area will provide the space, if needed, for an additional transformer and switches to increase the output voltage from the 34.5-kV lines from the

solar arrays to the voltage of the transmission line (230 kV). The expanded substation area may also include protective relay and metering equipment.

- **Service Roads and Gates –** The Certificate Holder will construct additional 16-foot wide service roads within and around the perimeter of the solar arrays, and within the solar micrositing corridors, to facilitate access for construction and maintenance purposes. The perimeter road along with additional cleared area will provide a 100-foot-wide cleared area around the solar arrays for fire safety. The perimeter service road will be bordered by a 7 or 8-foot-high chain-link security fence. The main purpose of the fence is to prevent unauthorized access to the site. There will be locked security entrance gates to allow vehicle and pedestrian access.

4.0 Approximate Dimensions - OAR 345-021-0010(b)(C)

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

Sections 2 and 3 provide a complete description of components proposed for development of the solar arrays and related or supporting facilities. Dimensions included in the descriptions are for representative purposes only. The vendor, size, number, and arrangement of the solar modules (as arrays) have not yet been determined. Ultimately, the solar modules will not be higher than 16 feet at full tilt and will at maximum occupy the full buildable area (solar array areas) of each of the two solar micrositing corridors (see Exhibit C, Figure C-3). Attachment B-1 provides pictures of existing NextEra solar arrays to provide examples of how solar arrays generally appear in scope and size.

5.0 Pipelines and Transmission Line Corridor Assessment – OAR 345-021-0010(b)(D)

OAR 345-021-0010(b)(D) If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how the applicant selected the corridor(s) for analysis in the application. In the assessment, the applicant shall evaluate the corridor adjustments the Department has described in the project order, if any. The applicant may select any corridor for analysis in the application and may select more than one corridor. However, if the applicant selects a new corridor, then the applicant must explain why the applicant did not present the new corridor for comment at an informational meeting under OAR 345-015-0130. In the assessment, the applicant shall discuss the reasons for selecting the corridor(s), based upon evaluation of the following factors:

The proposed changes in RFA 4 do not include a pipeline or a transmission line that, by itself, is an energy facility under the definition in ORS 469.300. Therefore, this section does not apply.

6.0 Description of Pipelines and Transmission Lines – OAR 345-021-0010(b)(E)

OAR 345-021-0010(b)(E) If the proposed energy facility is a pipeline or transmission line or has, as a related or supporting facility, a transmission line or pipeline of any size:

The proposed changes in RFA 4 do not include a pipeline or a transmission line that, by itself, is an energy facility under the definition in ORS 469.300. Therefore, this section does not apply.

7.0 Facility Construction Schedule – OAR 345-021-0010(b)(F)

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

The Certificate Holder will begin construction by May 24, 2020, consistent with Site Certificate Condition GEN-GS-01. The Certificate Holder has not yet developed the exact schedule of construction activities. However, it is anticipated that construction will be staggered throughout the approved construction period, with wind facilities being constructed first. The Certificate Holder is requesting Site Certificate Condition GEN-GS-02 be amended to extend the construction completion date by approximately 6 months, to December 31, 2023 instead of May 24, 2023. This extension is to allow additional construction time, if needed, for the additional solar project components, as proposed under RFA 4. The Certificate Holder does not anticipate beginning any work on the site, other than surveying, exploration, or other activities to define the character of the Amended Site Boundary, before Council approval of RFA 4.

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Attachment B-1. NextEra Solar Energy Booklet

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NEXTera® ENERGY RESOURCES

Our **Solar Energy** Business

Our **Business Operations**

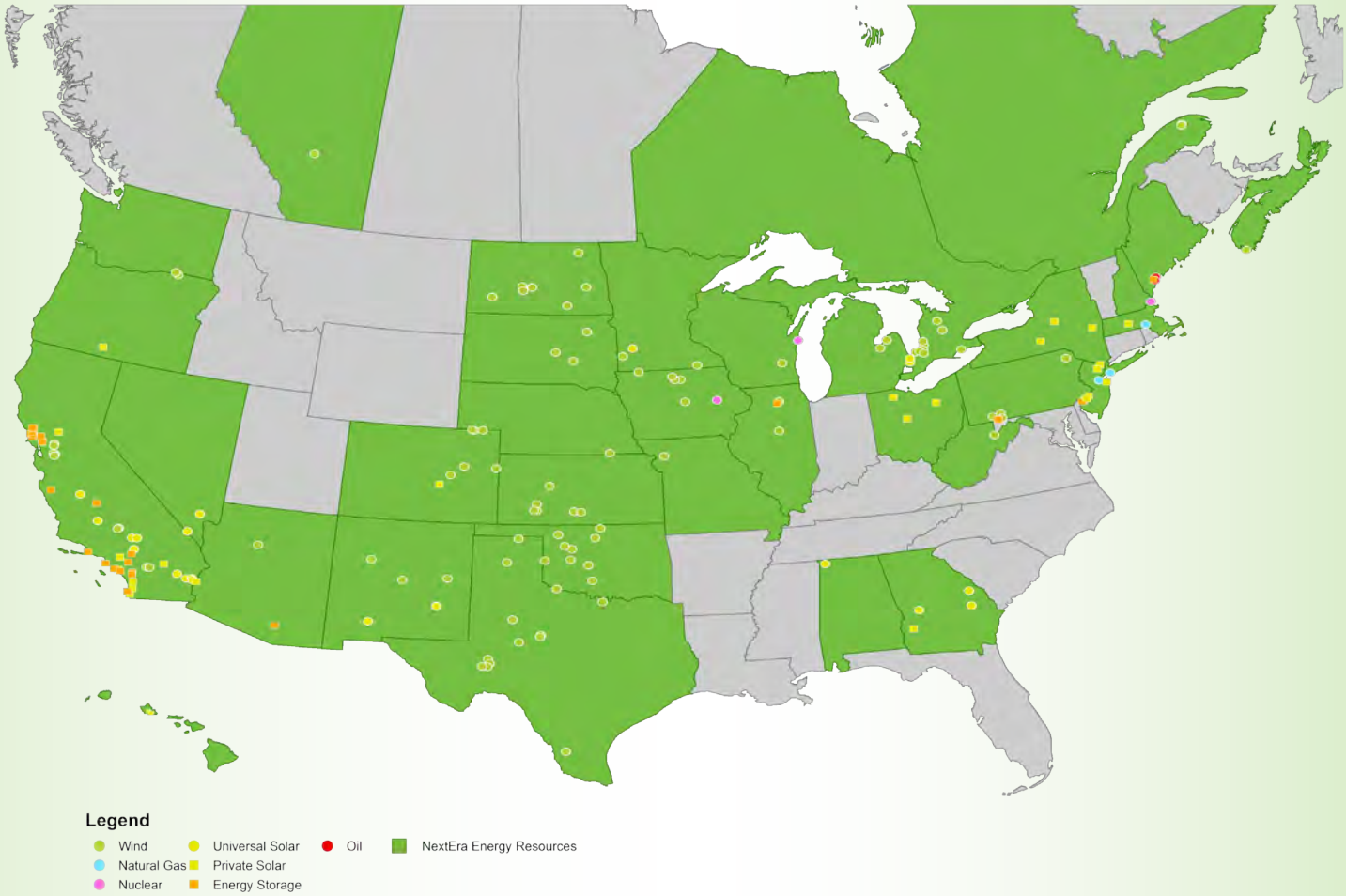
Based in Juno Beach, Florida, NextEra Energy Resources, LLC, is the competitive energy subsidiary of NextEra Energy, Inc., a Fortune 200 company and one of the nation's largest clean energy providers with consolidated revenues of approximately $16.2 billion in 2016.

NextEra Energy Resources is primarily a wholesale power generator, operating power plants and selling the output to utilities, retail electricity providers, power cooperatives, municipal electric providers and large industrial companies.

Nationally recognized as a leading clean energy provider, NextEra Energy Resources has a portfolio of facilities, totaling more than 19,800 net megawatts (MW) of generating capacity in the United States and Canada. More than 95 percent of our electricity is derived from clean or renewable sources, including wind, solar, natural gas and nuclear energy.

NextEra Energy Resources' operations are diversified not only by fuel sources, but by geographic regions. This helps us manage our power generation business more efficiently and economically, especially in today's volatile energy markets.

NextEra Energy Resources
Generation Facilities in Operation (As of 3/1/17)



Provider of **Energy Services**

NextEra Energy Resources has established a strong reputation based on outstanding performance at every level. We continue to solidify our position as one of the nation's leading energy providers by focusing on:

Development, construction and operation

NextEra Energy Resources is a world leader in the development, construction and operation of wind energy centers. Standardized processes, best practices and superior execution have earned us the top position in the field.

We are also experienced in other areas of power generation, including solar, nuclear energy and fossil fuels. Given our experience in these areas, NextEra Energy Resources is uniquely suited to continue developing and acquiring power plants to meet the nation's growing energy needs.

Transmission facilities

Power plants alone are only part of the energy equation. As additional power generation facilities become operational, we need to move this power from the generation sites to where it is needed. To do that, the electric transmission system must be improved, and NextEra Energy Resources is doing its part. Although we own various transmission lines across the country, we are pursuing additional large-scale opportunities to develop, build and operate new transmission facilities through an affiliate company, NextEra Energy Transmission.

Renewable energy expertise at WindLogics

WindLogics, one of our subsidiaries based in St. Paul, Minnesota, provides renewable energy consulting services, using industry-leading scientific analysis for planning, siting and forecasting renewable energy projects. Besides being the lead wind and solar advisor to NextEra Energy Resources, WindLogics also serves the renewable energy and electric utility industries throughout North America and around the globe. The company employs meteorologists, computing experts and other industry specialists.

Power marketing

NextEra Energy Marketing, LLC, a NextEra Energy Resources' subsidiary, is one of the top-ten marketers of power in the nation. NEM buys and sells wholesale energy commodities, such as natural gas, oil and electricity; manages all the fuel needs of the NextEra Energy Resources' power generation fleet; and markets the output to customers across the country.

Renewable energy market

NEM markets the largest renewable energy portfolio in the country. NEM provides custom renewable energy solutions for customers with specific needs, from meeting regulatory mandates associated with a renewable portfolio standard to working with businesses to meet their goals on renewable energy generation or carbon emissions management.

Distributed or private generation

Our Distributed Generation (DG) team tailors solar solutions that enable customers to generate clean, reliable energy from their rooftops, parking structures and open land. DG develops, builds, finances and operates the systems for commercial, institutional, utility and public power customers, helping them to control costs and make a meaningful impact on their renewable energy goals.

Retail market

NextEra Energy Resources entered the retail market in 2005. NextEra Energy Services and Gexa Energy serve customers in numerous U.S. retail markets and manage the related billing, customer service, collections and remittance services to residential and commercial customers.

Energy storage

Our team of specialists have spent years researching energy storage technologies. Today, we have approximately 90 MW of operational energy storage and a pipeline of development projects across the U.S. and Canada. With our best-in-class development skills, we are positioned to be a leader in the energy storage market.

Investment in **Energy Infrastructure**

Long before clean energy became a popular choice in the United States, NextEra Energy Resources had been leading the way in using clean fuels to produce electricity that is environmentally friendly.

Our renewable or clean energy mix includes:

Wind

NextEra Energy Resources remains the world's largest generator of U.S. wind generating facilities. We have more than 115 wind facilities in operation in North America capable of producing more than 13,800 MW of electricity.

NextEra Energy Resources' wind facilities have enabled our customers who have purchased the renewable attributes to reduce 2016 emissions that would have otherwise been released into the atmosphere from other sources of power generation, including:

» More than 29.1 million tons of carbon dioxide
» More than 27,300 tons of sulfur dioxide
» More than 23,000 tons of nitrogen oxide

In the coming years, NextEra Energy Resources plans to continue the aggressive expansion of its wind business.

Solar

NextEra Energy Resources is also the world's largest generator of solar energy. We generate solar energy at nine sites in California, as well as sites in Alabama, Georgia, Minnesota, New Jersey, New Mexico, Nevada and Canada. In all, the company operates approximately 2,200 MW of solar generation.

Natural gas

We have incorporated the cleanest burning fossil fuel into our portfolio with natural gas-fired facilities in three states. We often install combined-cycle technology that uses waste heat to drive an additional power generator for increased energy efficiency and lower emissions than conventional fossil-fueled units. This type of plant is about 30 percent more efficient than a traditional steam plant.

Nuclear energy

NextEra Energy Resources also incorporates clean nuclear energy into the fuel mix through Seabrook Station in New Hampshire, Duane Arnold Energy Center in Iowa and Point Beach Nuclear Plant in Wisconsin. Nuclear power plants produce virtually no air emissions during operation, representing a responsible energy choice for the future as global warming and climate change concerns intensify. All three NextEra Energy Resources' nuclear power plants have excellent safety records and are focused on reliable operation.

Bringing **Solar Energy** to Market

Solar energy benefits

While no energy source is perfect, we believe the benefits of solar energy far outweigh the negatives. For example, solar plants operate when energy consumption needs are at their highest, effectively matching energy supply and demand.

The other benefits of NextEra Energy Resources' photovoltaic (PV) solar portfolio are considerable, including:

» creates no greenhouse gases or other air pollutants;
» uses no water resources to generate electricity;
» provides a renewable fuel supply;
» creates no waste by-products for disposal;
» results in no hazardous cleanup at the end of a project's productive life; and
» is a completely silent operation.

Our solar expertise

NextEra Energy Resources entered the solar generation business in 1989 through its interest in Solar Electric Generating System (SEGS), one of seven solar thermal projects sited in Kramer Junction and Harper Lake, Calif.

Since then, the company has significantly expanded its solar development to approximately 2,200 MW of operating assets with 1,100 MW of assets brought into service in 2016 alone.

Vital landowner relationships

PV solar facilities require a large area for development. Our general rule of thumb is that each MW of power will require five to eight acres of land to support the solar equipment as well as easements for power line infrastructure. For example, a 20 MW facility will require about 100 to 160 acres.

We generally aim to site a project as close as possible to existing electrical transmission or distribution infrastructure. We try to avoid too much land variation, extreme terrain and trees when siting a project because such characteristics can cause shading, reducing the project's electrical production.

A solar PV project only requires water during construction for dust control as well as infrequent panel cleaning during operations.

If an area is promising after our initial assessment, NextEra Energy Resources will enter into a purchase or lease option agreement with landowners, which provides additional time for further evaluation of the property.

Landowners receive option payments based upon the final agreed dollar per acre value of the property. Throughout the option period, landowners are able to continue to conduct business as usual on their land. Landowners are not the only beneficiaries. Their decision to help develop a solar project in their community brings additional jobs to the area, increased tax revenue and our purchases of local goods and services.

Siting a solar project

Siting a solar project is challenging work and includes finding the right combination of solar conditions, power transmission lines and land. In addition to working with landowners to familiarize them with the process and what to expect, our developers are busy on a wide range of issues related to developing a solar site, including:

» meeting with and providing information to local officials on project progress;
» conducting environmental assessments;
» completing historical and archaeological reviews;
» arranging to connect to the local power grid;
» securing customers for the site's generated electricity;
» attending public meetings to gain approval for construction;
» permitting and land use zoning, as applicable; and
» procuring equipment.

Environmental stewardship

» NextEra Energy Resources works closely with federal, state and local environmental organizations.
» Environmental assessments determine suitability of prospective solar sites.
» Land and wildlife are respected and protected during construction and operations.
» Land is restored after construction.

Workers discuss the construction of the White Pine Solar Energy Center in Georgia.

Crews are Experienced in **Construction**

Construction is carefully planned

NextEra Energy Resources' construction team is experienced in building solar PV plants. When all approvals are in place and landowners have signed their contracts, construction can begin. Our construction managers and engineers oversee and are responsible for all work and all contractors at a construction site. They, and often their families, live in the community during construction.

Approximately 90 to 120 contractors can be involved in a typical solar construction project. Our goal is to hire as many workers from the area as possible, including heavy equipment operators, electricians, laborers, security and others.

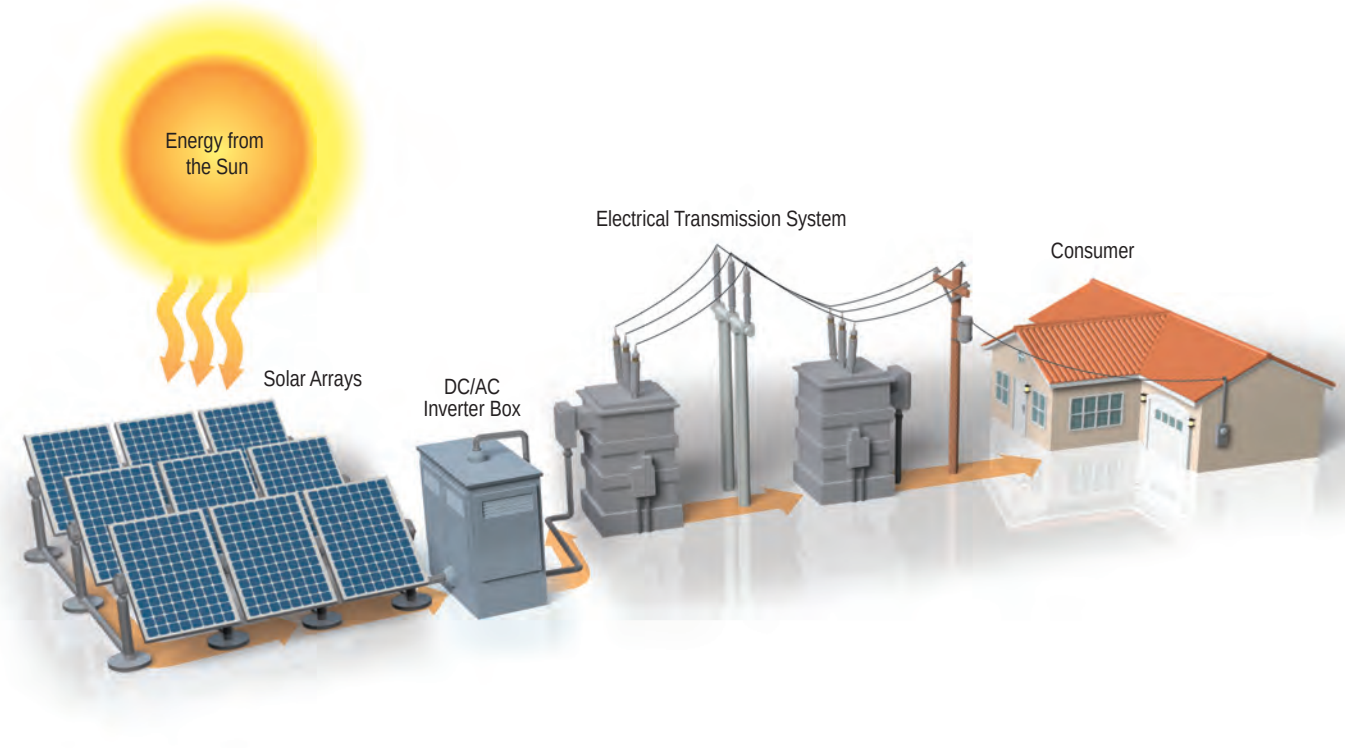
Construction typically takes between six and 12 months. Our construction manager and staff stay in close contact not only with landowners, but also with local government, to keep interested parties apprised of progress and to ensure adherence to all local building code requirements.

Some of the major steps involved include:

- erecting a fence for safety;
- laying high-quality gravel roads to accommodate heavy equipment;
- constructing a substation and possibly an operations and maintenance building;
- installing the solar arrays, which are typically about six to eight feet tall and are erected on steel posts driven into the ground; and
- testing and commissioning the completed arrays.

When construction is complete and the plant has begun commercial operation, the site is turned over to our operations staff who operate and maintain the solar plant.

How a photovoltaic solar plant works



As sunlight hits the solar panels, the photovoltaic energy is converted into direct current electricity (DC). The direct current flows from the panels through inverters and is converted into alternating current (AC). Finally, the electricity travels through transformers, and the voltage is boosted for delivery onto the transmission lines, so the local electric utility can distribute the electricity to homes and businesses.

Generating **Home-Grown** Solar Energy

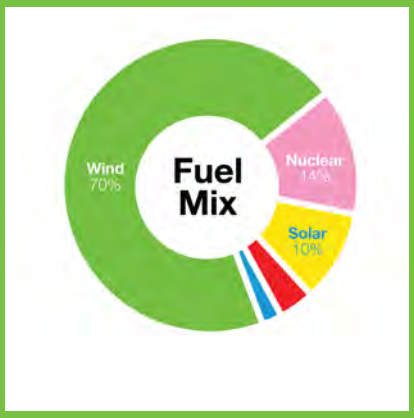
NextEra Energy Resources is the world's leader in generating solar energy. Lower solar panel costs have greatly improved the economics of solar power, and the benefits are significant. For local communities, it means clean, home-grown energy that also provides much-needed tax income to rural communities -- to schools, libraries and other public services, benefiting the entire community.

Highlights of solar operations

- We have 28 solar projects with approximately 2,200 MW of owned solar generation.
- Thousands more megawatts are in the development pipeline for future construction and operation
- Solar generation does not use water for power generation.
- Solar power generation is emissions free.

A Diversified Portfolio

Total Net Megawatts: 19,882
Updated January 1, 2017



*Includes megawatts associated with noncontrolling interests related to NextEra Energy Partners, LP

NEXTera® ENERGY RESOURCES

NextEra Energy Resources, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

For more information, go to:
NextEraEnergy.com
NextEraEnergyResources.com

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Attachment B-2. NextEra Energy Storage Booklet

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NEXTera® ENERGY RESOURCES

Our **Energy Storage** Business

A **Promising Future** For Energy Storage

Technology offers flexibility, value in today's energy market

Meeting today's energy challenges is complicated. The power infrastructure must be able to balance supply and demand instantaneously while taking into account the impacts of intermittent renewable energy. Consumers are also looking for energy services and products that provide flexibility and value in the areas of renewable energy, grid reliability and peaking power.

NextEra Energy Resources is helping meet these needs through energy storage technology, which is providing a promising way to store electrical energy so it can be available to meet demand whenever needed. While there are many energy storage technologies, NextEra Energy Resources has focused on the use of batteries as costs have declined, but is continuing to evaluate other storage technologies.

"We expect to be a leader in energy storage. We are applying our experience, talent and resources to further develop this technology for the benefit of our customers."

Mike O'Sullivan, Senior Vice President of Development NextEra Energy Resources

Energy storage delivers advantages to the power grid and our customers

What makes energy storage attractive is that it allows energy to be delivered instantly, in the required amount, to either grid operators or direct consumers. By doing this, energy storage provides many advantages, such as improving the operation of the electrical grid, integrating renewable resources and helping investment decisions.

- **Grid enhancement.** Energy storage can balance load on the power system grid by moving energy when demands are low to times when demands are high. The technology also allows for a seamless switch between power sources and protects equipment by controlling voltage and frequency.
- **Renewable resources.** Energy storage fills in the gaps resulting from intermittent resources like wind and solar generation. That means operators can more easily bring on and off renewable energy, reducing the need for load balancing services and rapid generation ramping.
- **Electrical system investments.** By reducing the load on congested transmission and distribution systems, energy storage may defer expensive upgrades. In some cases, storage may also reduce new investment in conventional resources, such as adding generating plants to meet systemwide peak load.

NextEra Energy Resources owns and operates the 20-megawatt (MW) Lee DeKalb Energy Storage Facility in Illinois. The facility helps balance the power grid frequency in a matter of seconds.

NextEra Energy Resources brought into service the 18-MW Meyersdale Energy Storage Facility in Pennsylvania in 2015. The company is developing additional energy storage facilities across North America.

Projects require little land, provide many benefits

Energy storage projects do not require a large area for development, are scalable in size and can be located in many places. NextEra Energy Resources generally seeks to site a project as close as possible to existing electrical transmission or distribution infrastructure and often, close to an existing renewable project.

Other benefits of energy storage include no greenhouse gases or other air pollutants, no use of water to generate electricity, and a renewable supply of energy.

Interest in energy storage is growing

The growing interest in energy storage is being driven by a number of factors, including:

- Reductions in technology costs;
- The rapid development of intermittent renewable energy resources;
- The evaluation of new policy initiatives by states; and
- Regulatory changes.

For example, the Federal Energy Regulatory Commission has mandated policy changes in the frequency regulation market that have helped spur the use of energy storage for this purpose. Certain markets are now requiring utilities to use energy storage to manage the intermittent energy that flows into the grid.

Costs are expected to decline

While emerging technology costs tend to be higher and therefore less competitive during the early evolution phase, technological efficiencies, improved manufacturing productivity and economies of scale help lower cost over time. As batteries gain wider industry adoption, prices are expected to decrease further.

Energy storage is safe, reliable

Safety is always a top priority in NextEra Energy Resources' operations, and energy storage systems are no exception.

Our battery storage systems are safe and reliable. Overall, energy storage has been a part of the U.S. electric system since the 1930s. Today, it makes up approximately two percent of the nation's generation capacity, according to the Energy Storage Association.. The safety record of the industry is similar to or better than other forms of power generation or distribution.

NextEra Energy Resources is experienced in energy storage

Our team of specialists has spent years researching energy storage technologies, applications and use cases, leading to two demonstration projects in 2012 and 2013.

Today, NextEra Energy Resources has more than 100 MW of operational energy storage, including the Lee DeKalb Energy Storage Facility in Illinois, and the Meyersdale and Green Mountain Energy Storage Facilities in Pennsylvania. These facilities are being used for frequency regulation. Traditionally, fossil and hydroelectric power plants have been used for frequency regulation. Now, batteries can also accomplish this task more efficiently.

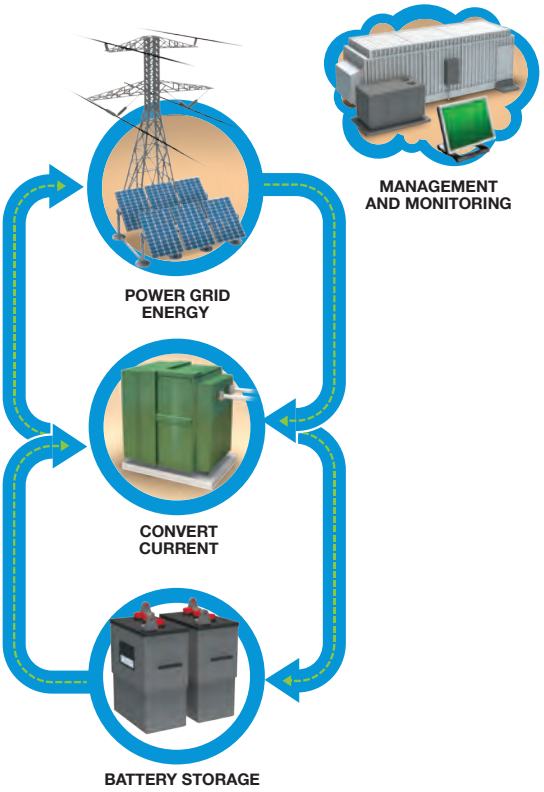
In addition to the growth of operational facilities, the company has a robust pipeline of development projects across the U.S. and Canada.

Batteries are packed into removable racks similar to a computer server. There are also monitoring, control and power conversion systems as well as cooling and fire suppression systems.

About 3,000 batteries are housed in white containers on the Lee DeKalb wind site. Our battery storage systems are safe, reliable and efficient.

How energy storage systems work

- A battery management system monitors the individual cells and controls the voltage, temperature and current for safe, reliable transfer of energy. The system automatically shuts off if the batteries are operating outside of predefined parameters.
- A computerized monitoring system provides up-to-date weather forecasts, power prices, historical electrical use, the amount of charge remaining in the batteries and when to use the energy storage system.
- Energy from the power grid or from renewable energy sources is delivered via a bidirectional inverter, which converts the energy from alternating current (AC) into direct current (DC). Today's batteries can only store DC. This energy goes into an array of batteries that is typically housed within a battery container or a building structure.
- When the energy is needed on the power system, the inverters are then used again, but this time to convert the DC from the batteries into AC. Once the power has been transformed, it is stepped up in voltage and subsequently sent to an on-site substation or directly to a distribution or transmission line.
- The electricity is then distributed to homes, schools, businesses and other consumers.



NextEra Energy Resources has a proven reputation for excellence

As the largest operator of wind and solar energy in the world, NextEra Energy Resources has earned a reputation for excellence. Our scale, size and scope of services allow us to offer innovative energy solutions to customers, and energy storage is a natural extension of our development business.

By working with NextEra Energy Resources, customers can realize the monetary benefits of energy storage while mitigating technology complexity and vendor risk. With our significant purchasing power, we can buy energy storage equipment at the lowest possible costs. With our best-in-class development skills, we can also build customized storage solutions to meet customers' unique requirements.

Energy storage has the potential to be a game changer for the energy industry, and NextEra Energy Resources is positioned to become a leader in the market.

NextEraEnergyResources.com

NextEra Energy Resources, LLC | 700 Universe Boulevard | Juno Beach, FL 33408

NEXTera ENERGY RESOURCES

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Exhibit C

Project Location and Maps

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Power Facility
kV	kilovolt
MW	Megawatts
OAR	Oregon Administrative Rules
RFA 4	Request for Amendment 4

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of up to 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. This exhibit contains information about the location of the Amended Site Boundary (solar micrositing corridors) for the solar generation facility, within and adjacent to the Approved Site Boundary (wind micrositing corridors) under Oregon Administrative Rules (OAR) 345-021-0010(1)(c).

The information included in this exhibit demonstrates the following:

- RFA 4 proposes to add approximately 1,527 acres of land adjacent to the Approved Site Boundary (13,097 acres) in Wheatridge West for a total Site Boundary of 14,624 acres. The Amended Site Boundary, which consists of 2,294 acres, provides for designated solar micrositing corridors at two locations that overlap with the approved wind micrositing

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

corridors. Section 3.4 details the anticipated total permanent and temporary disturbance area, including the additional disturbance associated with RFA 4 (ODOE 2017).

- OAR 345-001-0010 defines the Site Boundary as "the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas and all corridors and micrositing corridors proposed by the applicant." The proposed Amended Site Boundary, also known as the solar micrositing corridors, consists of all areas where solar arrays, inverters, transformers, distributed storage, and related collection lines will be installed. The Approved Site Boundary and proposed Amended Site Boundary are shown on Figure C-1.

2.0 General Location – OAR 345-021-0010(1)(c)(A)

OAR 345-021-0010(1)(c) Information about the location of the proposed facility, including:

(A) A map or maps showing the proposed locations of the energy facility site, all related or supporting facility sites and all areas that might be temporarily disturbed during construction of the facility in relation to major roads, water bodies, cities and towns, important landmarks and topographic features, using a scale of 1 inch = 2000 feet or smaller when necessary to show detail.

RFA 4 seeks to amend the Site Certificate to expand the Certificate Holder's Approved Site Boundary for the Facility onto adjacent land, in Morrow County, Oregon (see Figure C-1). Figure C-2 provides a map at the scale of 1 inch = 2,000 feet, showing the solar micrositing corridors, which contains the layout of Solar Array 1 and Solar Array 2, as well as the locations of all related or supporting facilities.

Table C-1 summarizes the general location of the Facility by the Public Land Survey System's Township, Range, and Section, as well as by county and the Tax Lot Identification Number of parcels that are directly affected by permanent or temporary Facility impacts.

Table C-1. Facility Location by Township, Range, Section, County, and Tax Lot ID Number

Township	Range	Section	County	Tax Lot ID Number
001 N	026 E	19	Morrow County	3502
001 N	026 E	20	Morrow County	3500
001 N	026 E	19	Morrow County	3500
001 N	026 E	29	Morrow County	3500
001 N	026 E	30	Morrow County	3500
001 N	026 E	19	Morrow County	3400
001 N	026 E	19	Morrow County	3300
001 N	026 E	18	Morrow County	3201
001 N	026 E	18	Morrow County	3200

Township	Range	Section	County	Tax Lot ID Number
001 N	026 E	17	Morrow County	2900
001 N	026 E	8	Morrow County	2700
001 N	026 E	9	Morrow County	2700
001 N	026 E	17	Morrow County	2700
001 N	026 E	16	Morrow County	2700
001 N	026 E	18	Morrow County	3100
001 N	025 E	13	Morrow County	1600
001 N	026 E	18	Morrow County	1600
001 N	026 E	10	Morrow County	1500
001 N	026 E	9	Morrow County	1500
001 N	026 E	6	Morrow County	1102
001 N	026 E	7	Morrow County	1102
001 N	026 E	8	Morrow County	1300
001 N	026 E	9	Morrow County	1300
001 N	025 E	24	Morrow County	3100
001 N	026 E	19	Morrow County	3100
001 N	026 E	9	Morrow County	400
001 N	026 E	7	Morrow County	1200
001 N	026 E	18	Morrow County	1200
001 N	026 E	8	Morrow County	1301
001 N	026 E	6	Morrow County	1100

3.0 Specific Location of Major and Supporting Facilities – OAR 345-021-0010(1)(c)(B)

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

The Amended Site Boundary will accommodate the new development of the solar arrays and their related and supporting facilities. Combined with the previously approved wind facility, the Facility

will have a total generating capacity of up to 650 MW. The solar micrositing corridors overlaps with the 13,097-acre Approved Site Boundary, as shown on Figure C-2.

RFA 4 proposes the addition of two additional 34.5-kilovolt (kV) collector lines (Figure C-2). The first will connect Solar Array 1 to the substation located in Solar Array 2, which will be a total of 2.32 miles. The second line is a 0.66-mile collector line along Bombing Range Road, which will connect both solar arrays. The 34.5-kV collector lines are described in further detail in Exhibit B, and will be constructed in the same manner as previously described in the Final Order and approved in the Site Certificate (ODOE 2017). No new 230-kV transmission lines are proposed as part of RFA 4.

3.1 Proposed Layout

The major components of the Facility include the previously approved wind turbines, which will be located within the Approved Site Boundary, and the solar arrays located within the solar micrositing corridors. Detailed views of the major components of the wind turbine facility and related or supporting facilities have not changed and are not repeated in RFA 4. Exhibit B provides a detailed description of the solar arrays. A detailed view of the major components of the solar arrays at a scale of 1 inch = 2,000 feet is shown in Figure C-2.

3.2 Location of Micrositing Corridors

As previously approved in the Final Order on the Application for Site Certificate (ODOE 2017), the wind turbine micrositing corridors allow for flexibility in siting the final location of the components. The Certificate Holder requests similar micrositing flexibility for the solar arrays, such that components of the solar arrays may be constructed anywhere within the solar micrositing corridors. The solar arrays will be microsited during the final design to avoid or minimize both temporary and permanent impacts to high-quality habitat, and to retain habitat cover in the general landscape, to the extent practicable. The solar arrays will also be microsited to minimize impacts to current agricultural operations in the area. The wind and solar micrositing corridors overlap in some areas. In these areas, the solar arrays are being sited in consideration of turbine locations.

3.3 Land Area

Table C-2 provides an estimate of permanent and temporary disturbances associated with the construction of the solar arrays by feature. Table C-2 presents the impact by disturbance type. However, some disturbance types overlap by the nature of their development. For example, access roads will be both within and outside of the fence line of the solar arrays. Therefore, the last row in the table provides the temporary and permanent disturbance area for the proposed changes in RFA 4 with any development overlap removed. For evaluation of the solar arrays, the Certificate Holder considered a layout that would permanently occupy up to 893.8 acres within the solar micrositing corridors. This layout represents the worst-case scenario for purposes of analyzing land use impacts (see further discussion in Exhibit K).

3.4 Temporary and Permanent Disturbance Areas

Table C-2. Estimated Temporary and Permanent Disturbance (in Acres)

Disturbance Type	Temporary	Permanent	Total
Fence Line (solar arrays)	–	887.1	887.1
Substation	–	5.0	5.0
Collector Line (overhead or underground)	8.7	0.8	9.5
Access Road	–	27.8	27.8
Total	**8.0**	**893.8**	**901.7**
Note that totals do not sum correctly because the total eliminates any overlap with other features, whereas the rest of the numbers include the overlap.			

4.0 Energy Generation Facilities – OAR 345-021-0010(1)(c)(C)

OAR 345-021-0010(1)(c)(C) For energy generation facilities, a map showing the approximate locations of any other energy generation facilities that are known to the applicant to be permitted at the state or local level within the study area as defined in OAR 345-001-0010 for impacts to public services.

Figure C-3 shows the proposed location of the Facility in relation to other energy generation facilities within 10 miles.

5.0 References

ODOE (Oregon Department of Energy). 2017. Final Order in the Matter of the Application for a Site Certificate for the Wheatridge Wind Energy Facility. April 2017.

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Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure C-1 Facility Overview

MORROW AND UMATILLA COUNTIES, OR

Solar Array 1

Solar Array 2

Umatilla County

Morrow County

207

74

74, 207

74, 207

74

Approved Site Boundary (Approved Wind Micrositing Corridors)

Amended Site Boundary (Proposed Solar Micrositing Corridors)

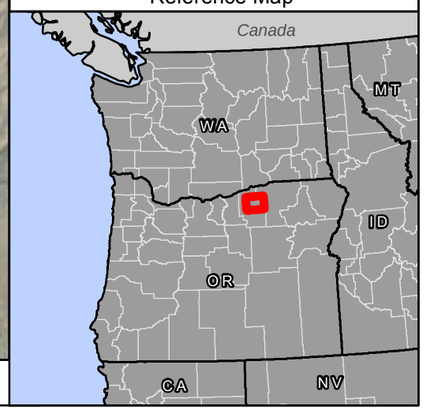
State Highway

County Boundary

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:130,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Map Grid
- State Highway
- Local Road

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

Figure C-2.1
Figure C-2.2
Figure C-2.3
Figure C-2.4
Figure C-2.5
Figure C-2.6
Figure C-2.7
Figure C-2.8
Figure C-2.9
Figure C-2.10
Figure C-2.11
Figure C-2.12
Figure C-2.13
Figure C-2.14
Figure C-2.15
Figure C-2.16
Figure C-2.17
Figure C-2.18
Figure C-2.19
Figure C-2.20
Figure C-2.21
Figure C-2.22
Figure C-2.23
Figure C-2.24
Figure C-2.25
Figure C-2.26
Figure C-2.27
Figure C-2.28
Figure C-2.29
Figure C-2.30

Grieb Wood Rd
Grieb Ln
Little Juniper Ln
Juniper Rd
Bombing Range Rd
Doherty Rd
Melville Rd
Lexington-Echo Hwy
Barak Martin Rd N
Sand Hollow Rd
Strawberry Ln
207
Strawberry East Rd
State Hwy 207
Barak Martin Rd
Barclay Rd
Barclay Ln
Kemp Rd
Kilkenny Rd
Lindsay Rd
Beach Ln

1:30,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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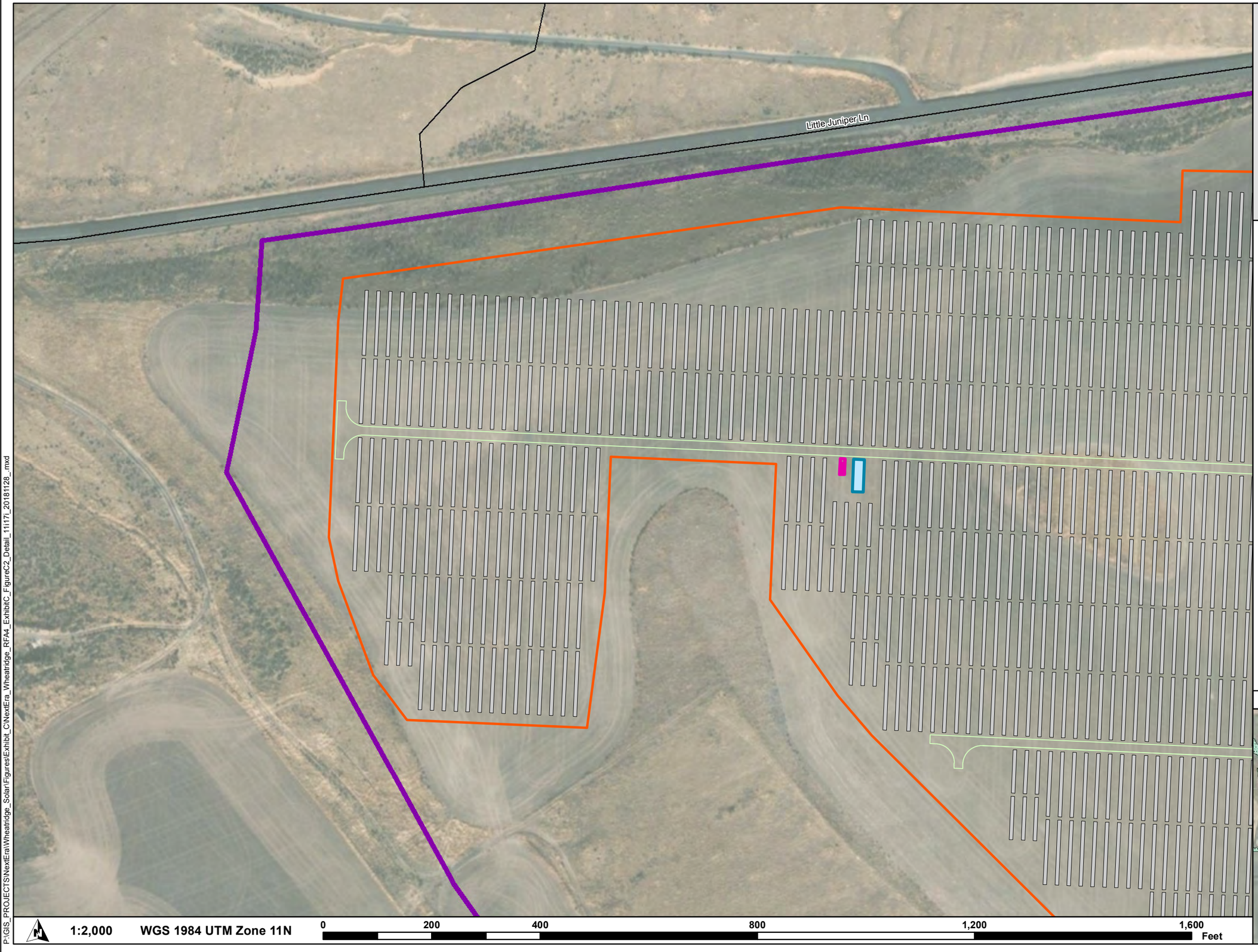
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.1
Facility Layout

MORROW COUNTY, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

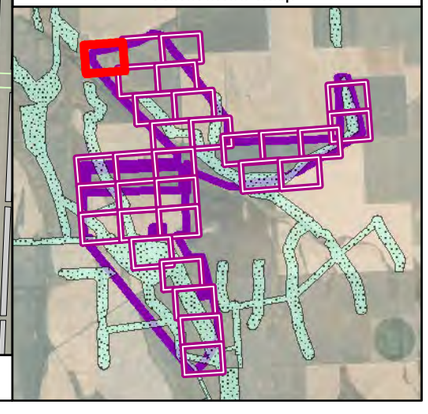
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.2
Facility Layout

MORROW COUNTY, OR

Little Juniper Ln

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

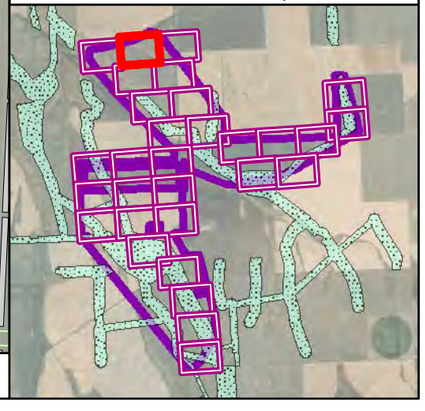
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.3
Facility Layout

MORROW COUNTY, OR

Approved Site Boundary
(Approved Wind Micrositing Corridors)

Amended Site Boundary
(Proposed Solar Micrositing Corridors)

State Highway

Local Road

Facility Layout

Solar Access Roads

Proposed Collector Line

Proposed Substation

Approved Substation

Fenceline

Solar Tracker

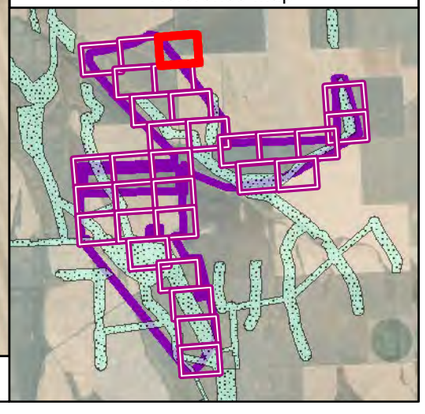
Inverter Skid

Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



Bombing Range Rd

1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.4
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

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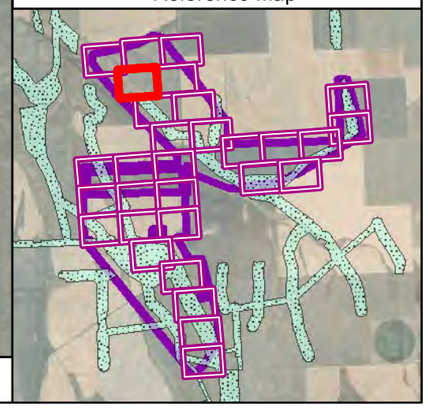
Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.5
Facility Layout

MORROW COUNTY, OR

Bombing Range Rd

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

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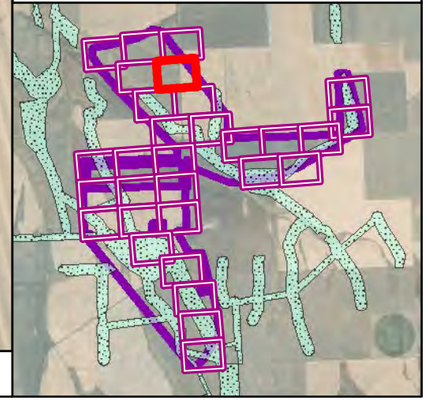
Reference Map



1:2,000 WGS 1984 UTM Zone 11N

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.6
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

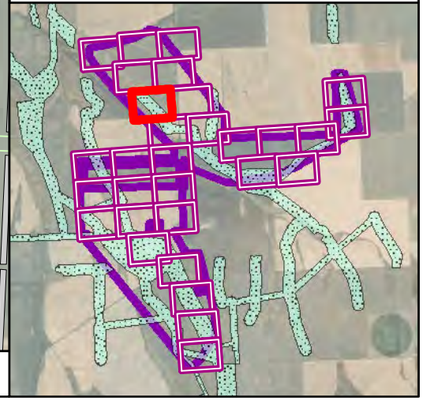
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.7
Facility Layout

MORROW COUNTY, OR

Bombing Range Rd

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

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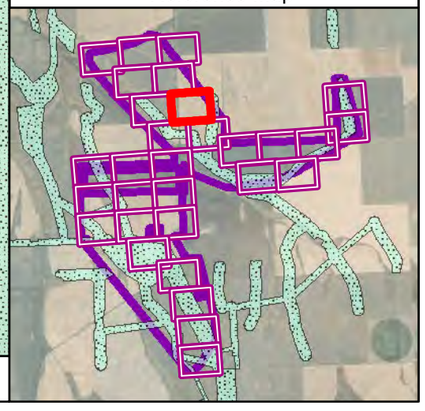
Reference Map



1:2,000 WGS 1984 UTM Zone 11N

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.8
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

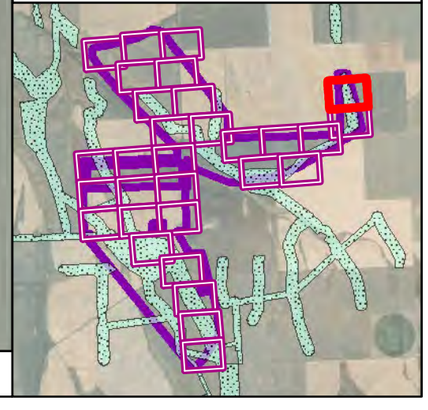
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure C-2.9 Facility Layout

MORROW COUNTY, OR

Approved Site Boundary (Approved Wind Micrositing Corridors)

Amended Site Boundary (Proposed Solar Micrositing Corridors)

State Highway

Local Road

Facility Layout

Solar Access Roads

Proposed Collector Line

Proposed Substation

Approved Substation

Fenceline

Solar Tracker

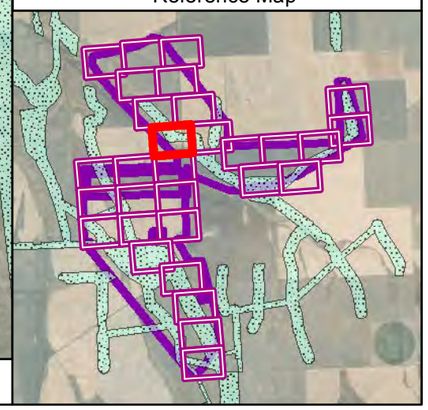
Inverter Skid

Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



Bombing Range Rd

1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.10
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

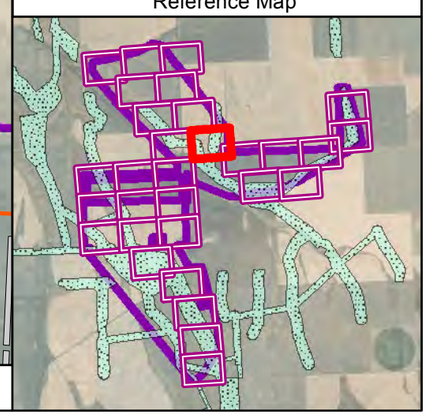
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure C-2.11 Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

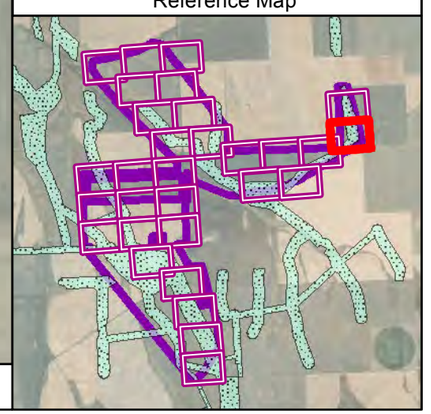
Facility Layout

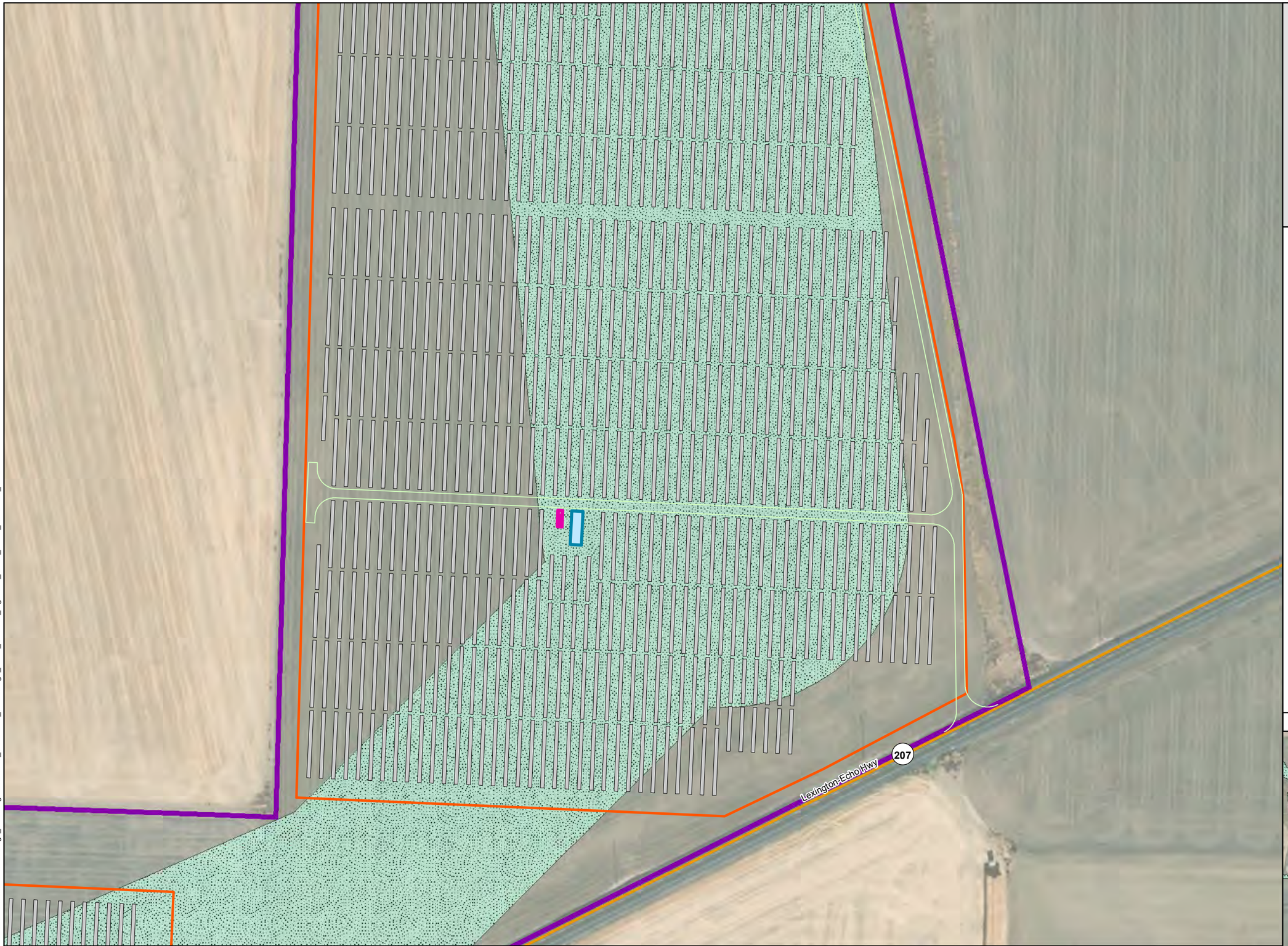
- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map





1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.12
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

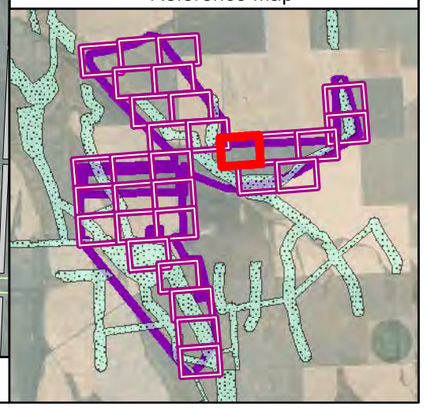
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.13
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

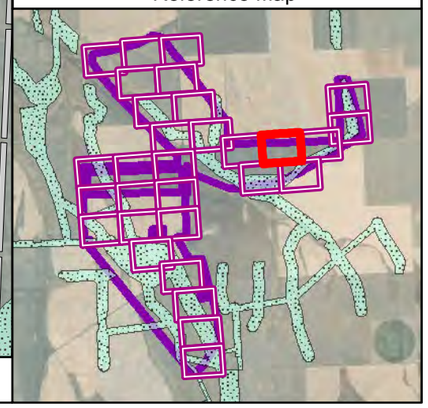
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.14
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

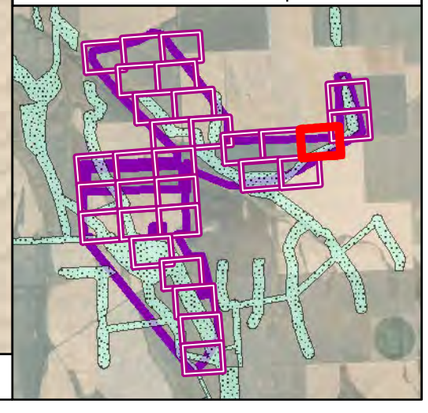
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



Lexington-Echo Hwy

207

1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.15
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

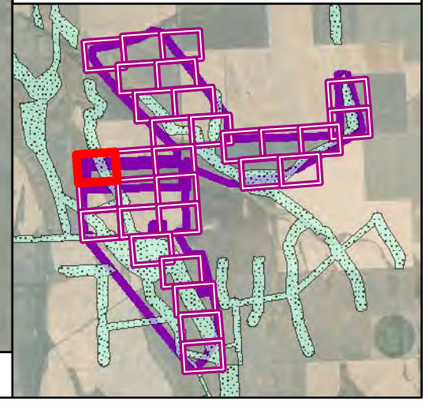
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.16
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

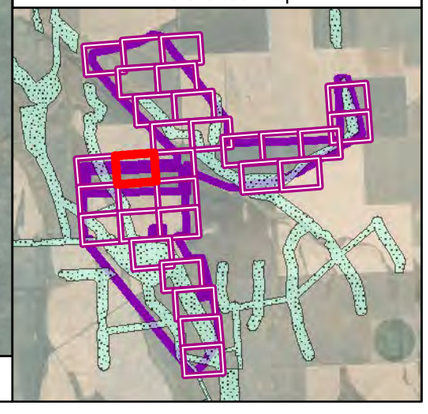
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.17
Facility Layout

MORROW COUNTY, OR

Bombing Range Rd

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

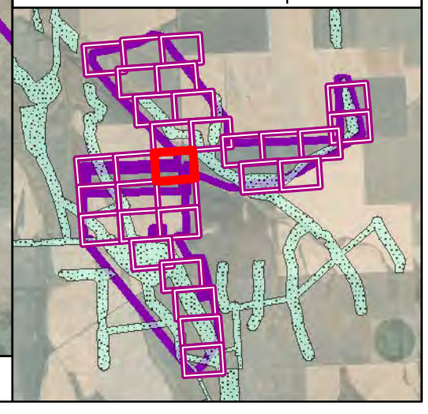
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.18
Facility Layout

MORROW COUNTY, OR

Strawberry Ln

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

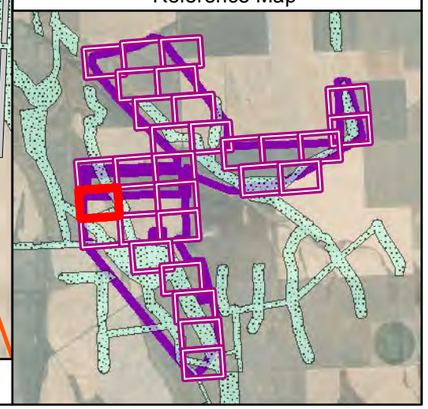
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.19
Facility Layout

MORROW COUNTY, OR

Strawberry Ln

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

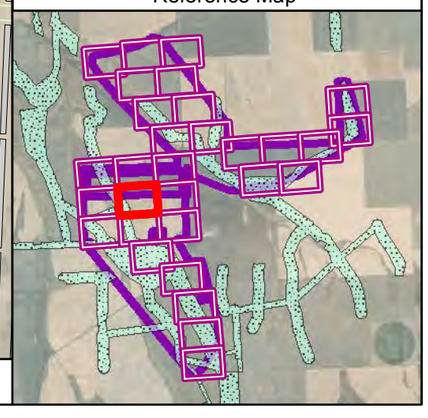
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.20
Facility Layout

MORROW COUNTY, OR

Strawberry Ln

Bombing Range Rd

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

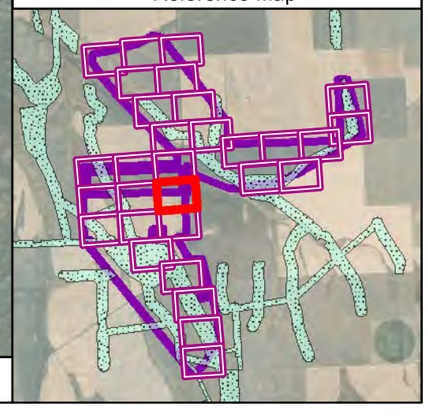
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.21
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

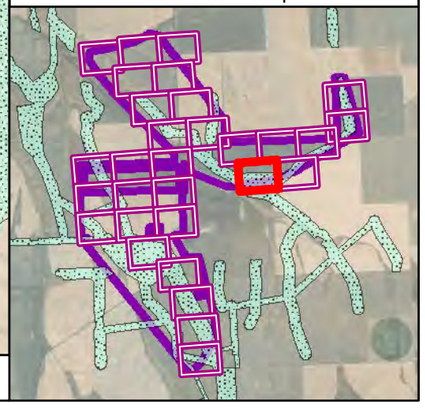
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

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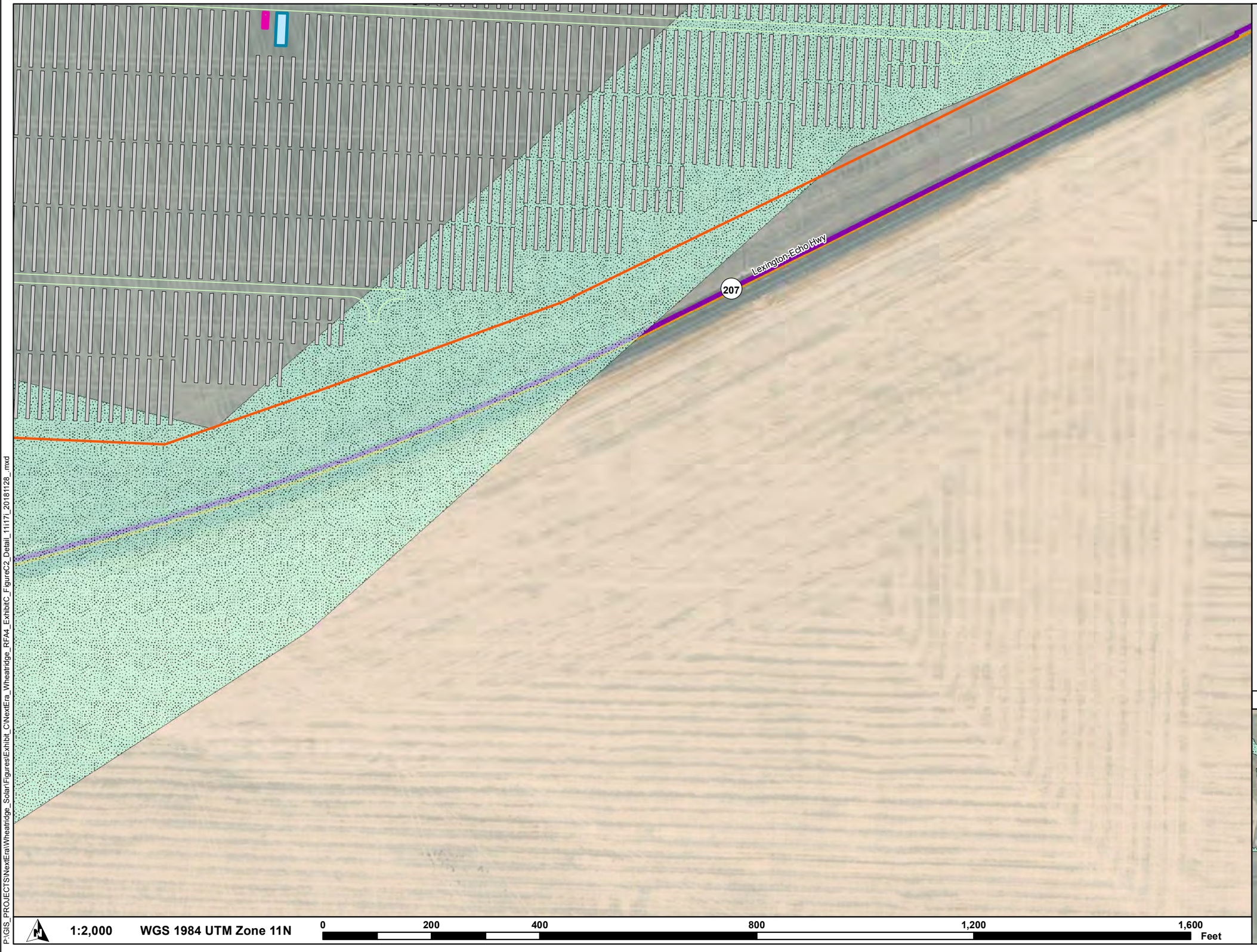
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.22
Facility Layout

MORROW COUNTY, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

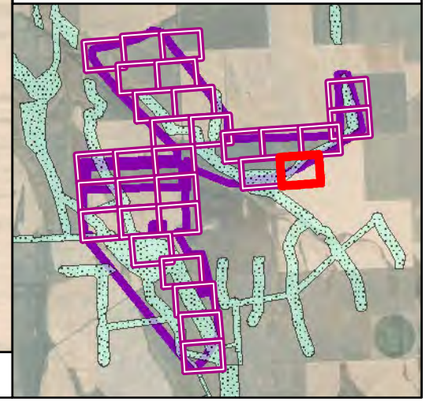
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.23
Facility Layout

MORROW COUNTY, OR

Approved Site Boundary
(Approved Wind Micrositing Corridors)

Amended Site Boundary
(Proposed Solar Micrositing Corridors)

State Highway

Local Road

Facility Layout

Solar Access Roads

Proposed Collector Line

Proposed Substation

Approved Substation

Fenceline

Solar Tracker

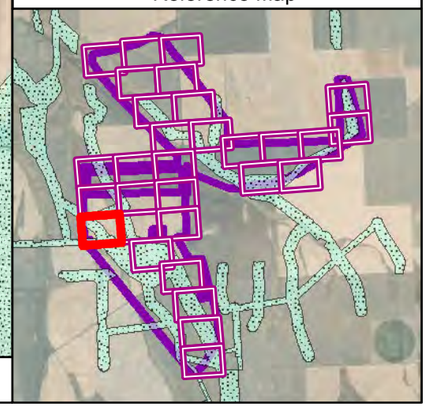
Inverter Skid

Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



Strawberry East Rd

1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.24
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

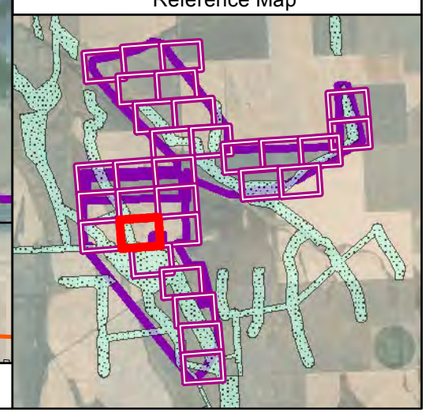
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



Strawberry East Rd

1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.25
Facility Layout

MORROW COUNTY, OR

Approved Site Boundary
(Approved Wind Micrositing Corridors)

Amended Site Boundary
(Proposed Solar Micrositing Corridors)

State Highway

Local Road

Facility Layout

Solar Access Roads

Proposed Collector Line

Proposed Substation

Approved Substation

Fenceline

Solar Tracker

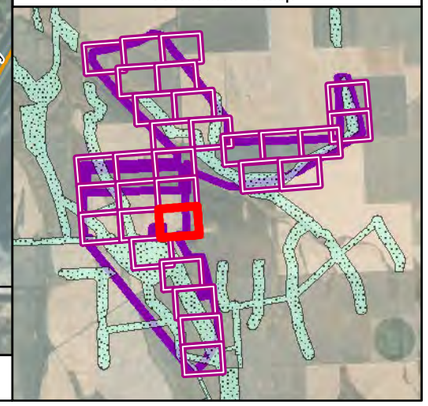
Inverter Skid

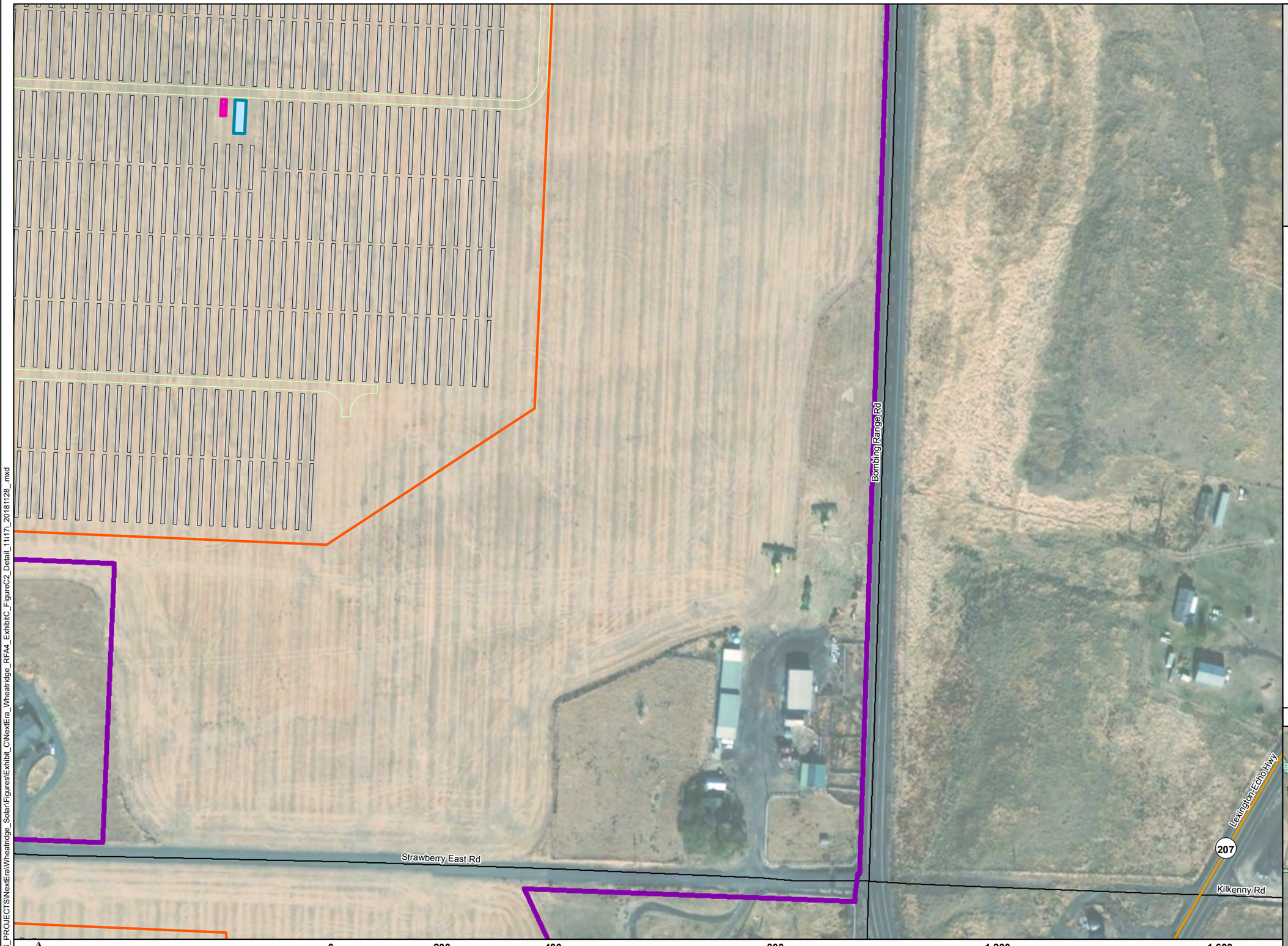
Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map





1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.26
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

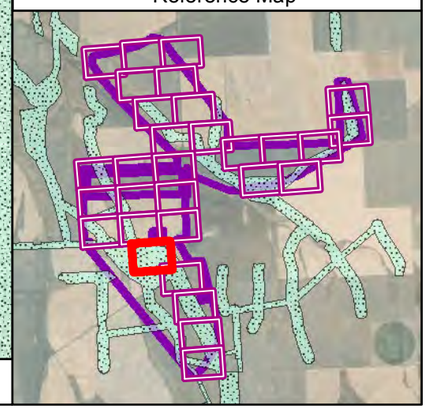
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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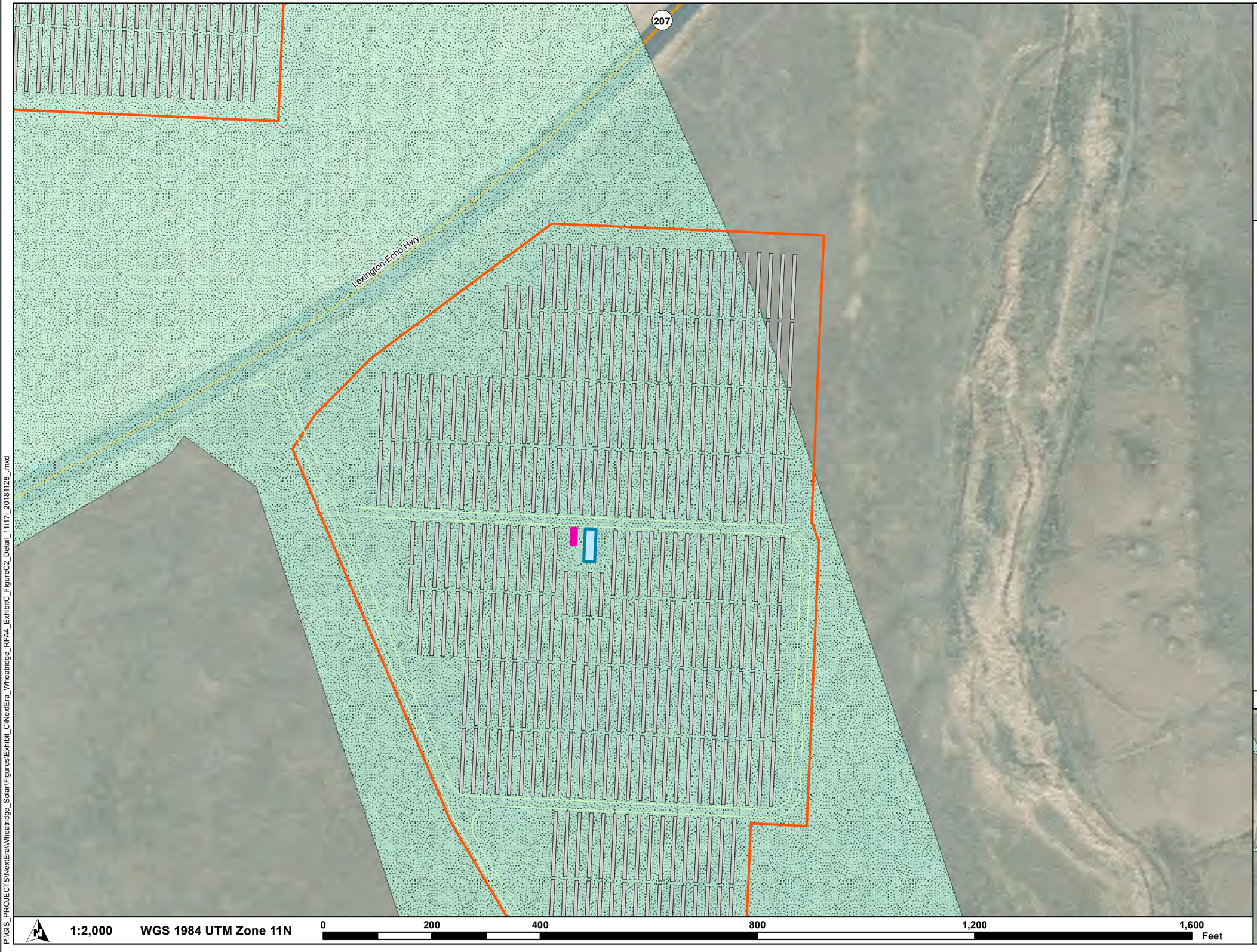
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.27
Facility Layout

MORROW COUNTY, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

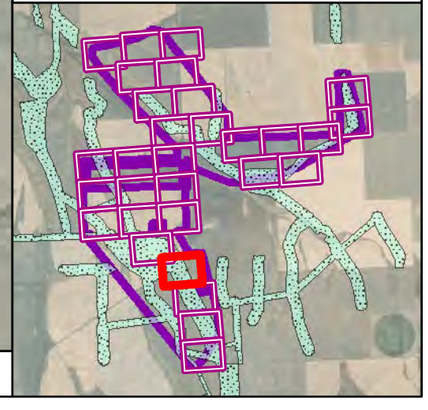
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.28
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

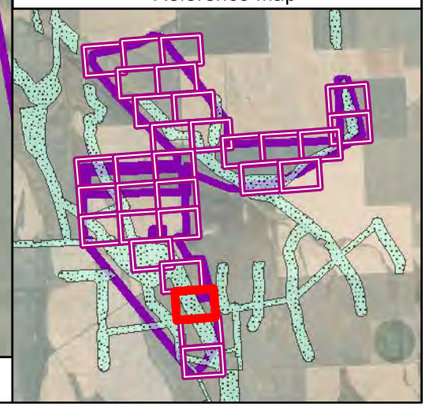
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.29
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

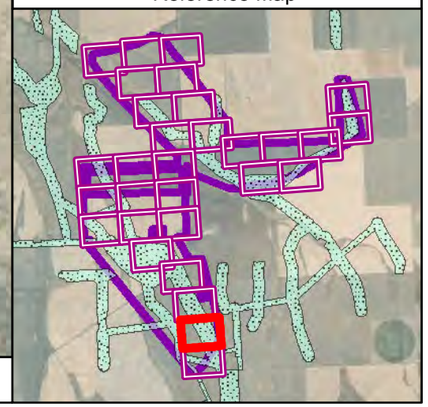
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure C-2.30
Facility Layout

MORROW COUNTY, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road

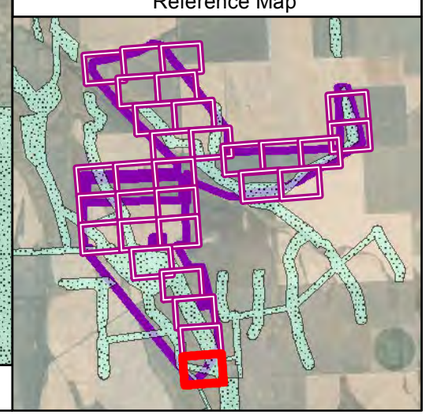
Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:2,000 WGS 1984 UTM Zone 11N

0 200 400 800 1,200 1,600 Feet

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure C-3 Energy Facilities Within 10 Miles

MORROW AND UMATILLA COUNTIES, OR

Washington
Klickitat County
Gilliam County
Morrow County
Oregon
Gilliam County
Morrow County
Morrow County
Umatilla County

30
730
84
82
207
37
30, 395
74
74, 207
206
206, 207

Approved Site Boundary (Approved Wind Micrositing Corridors)
Amended Site Boundary (Proposed Solar Micrositing Corridors)
Analysis Area (10-mile Buffer)
Interstate Highway
US Highway
State Highway
County Highway
State Boundary
County Boundary

Electrical Generating Plant
- Bio Gas
- Coal
- Natural Gas
- Solar
- Hydro
- Wind
- Substation

Transmission Line In Service
Transmission Line Proposed
Pipeline

Wind (operating)
- Echo Windfarm (OR)
- Shepherds Flat Wind Farm
- Threemile Canyon Wind
- Willow Creek Wind Project (OR)

Wind (in development)
- High Plateau Windfarm
- Lower Ridge Windfarm
- Montague Wind Power Facility
- Mule Hollow Windfarm
- Pine City Windfarm
- Saddle Butte Wind Park
- Mariah Wind Farm
- Ella Butte Wind Farm

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

1:275,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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Exhibit D

Applicant's Organizational Expertise

Wheatridge Wind Energy Facility
November 2018

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

TETRA TECH

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Table of Contents

List of Attachments

Acronyms and Abbreviations

Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
ISO	International Organization for Standardization
MW	Megawatts
NextEra	NextEra Energy Resources, LLC
NWC	Northwest Wildlife Consultants, Inc.
OAR	Oregon Administrative Rule

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. As part of Request for Amendment 4 to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. As part of this request, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. This exhibit, Exhibit D, describes the sources and organizational, managerial and technical expertise extent of the Certificate Holder as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010 (1)(d), paragraphs (A) through (G) in consideration of the proposed changes. Attachments B-1 and B-2 in Exhibit B provide additional information on the Certificate Holder's experience with solar generation and energy storage facilities. As detailed in the following sections, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for compliance with the respect to the Organizational Expertise standard

[1] Per OAR 345-001-0010(32) "Micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

OAR 345-022-0010. Therefore, the Council may rely on its previous conclusion that the Facility complies with the Organizational Expertise standard (OAR 345-022-0010):

OAR 345-022-0010 Organizational Expertise

(1) To issue a site certificate, the Council must find that the applicant has the organizational expertise to construct, operate and retire the proposed facility in compliance with Council standards and conditions of the site certificate. To conclude that the applicant has this expertise, the Council must find that the applicant has demonstrated the ability to design, construct and operate the proposed facility in compliance with site certificate conditions and in a manner that protects public health and safety and has demonstrated the ability to restore the site to a useful, non-hazardous condition. The Council may consider the applicant's experience, the applicant's access to technical expertise and the applicant's past performance in constructing, operating and retiring other facilities, including, but not limited to, the number and severity of regulatory citations issued to the applicant.

(2) The Council may base its findings under section (1) on a rebuttable presumption that an applicant has organizational, managerial and technical expertise, if the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program.

(3) If the applicant does not itself obtain a state or local government permit or approval for which the Council would ordinarily determine compliance but instead relies on a permit or approval issued to a third party, the Council, to issue a site certificate, must find that the third party has, or has a reasonable likelihood of obtaining, the necessary permit or approval, and that the applicant has, or has a reasonable likelihood of entering into, a contractual or other arrangement with the third party for access to the resource or service secured by that permit or approval.

(4) If the applicant relies on a permit or approval issued to a third party and the third party does not have the necessary permit or approval at the time the Council issues the site certificate, the Council may issue the site certificate subject to the condition that the certificate holder shall not commence construction or operation as appropriate until the third party has obtained the necessary permit or approval and the applicant has a contract or other arrangement for access to the resource or service secured by that permit or approval.

2.0 Applicant's Previous Experience – OAR 345-021-0010(1)(d)(A)

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

(A) The applicant's previous experience, if any, in constructing and operating similar facilities.

The Certificate Holder is a wholly-owned indirect subsidiary of NextEra Energy Resources, LLC (NextEra). NextEra, headquartered in Juno Beach, Florida, is the world's largest generator of renewable energy from the wind and sun. NextEra is a regionally diversified company with approximately 5,000 employees, dedicated to the production of approximately 19,882 MW from 175 facilities in 29 states and Canada. With more than 9,365 wind turbines in its fleet, NextEra's wind generation capacity totals more than 13,851 MW. NextEra is also capable of generating more than 420 net MW of electricity from natural gas facilities, operates three nuclear power plants with a capacity of more than 2,700 MW, and operates more than 2,100 MW of solar energy (see Exhibit B, Attachments B-1 and B-2). It is estimated that nearly 95 percent of the electricity produced by NextEra comes from clean or renewable sources.

Along with its rate-regulated sister company, Florida Power and Light, NextEra is a wholly owned subsidiary of NextEra Energy, Inc., a Fortune 150 Company with a market capitalization of approximately 66 billion dollars. The financial strength of NextEra and its parent company provides the company with the financial capital to self-finance and build up to 4 billion dollars of projects per year on its own balance sheet.

Within Oregon, NextEra subsidiaries—FPL Vansycle, LLC and FPL Energy Stateline II—constructed, own, and operate 186 turbines, with a total peak generating capacity of 123 MW at the Stateline 1 and 2 wind energy facilities, and 43 turbines with a total peak generating capacity of 99 MW at the Stateline 3 Wind Energy Facility. These projects were permitted through the Oregon Energy Facility Siting Council (Council) process and were issued a Site Certificate (with amendments) under the name "Stateline Wind Project."

3.0 Qualifications of Applicant's Personnel - OAR 345-021-0010(1)(d)(B)

OAR 345-021-0010(1)(d)(B) The qualifications of the applicant's personnel who will be responsible for constructing and operating the facility, to the extent that the identities of such personnel are known when the application is submitted.

The development activities for the Facility in Morrow and Umatilla counties undertaken by the Certificate Holder were originally conducted as part of a partnership between MAP Royalty, Inc. and an experienced team of development professionals based in Oregon, who have a long history of regional wind project development. The Certificate Holder will continue to benefit from an experienced team of professionals based in Oregon, as well as other locations throughout the continental United States.

The original Stateline Site Certificate was issued in 2001. Since then, the initial Site Certificate was amended several times to, among other reasons, accommodate new and expanded facilities. Members of the Facility's development and permitting team were directly involved in the initial

permitting of the Stateline facilities, as well as the subsequent amendments to the original site certificate. As a result, through its parent company, the Certificate Holder and its management team have a direct lineage to the some of the oldest, continuously owned and operated wind energy facilities in Oregon. Through this relationship, the Facility's management team and the NextEra family of companies have deep regional expertise, derived over years of successfully permitting and operating hundreds of MW of wind energy projects in the Oregon. NextEra employees have deep local ties to the communities we operate in, and a solid history of understanding local economic development, permitting, environmental concerns, and compliance with the various conditions stipulated within a Council site certificate.

Wheatridge Management Team Biographies

Jesse Marshall - Jesse has worked at NextEra for approximately 10 years. During Jesse's first 3 years at NextEra, he played a critical role in growing NextEra's development pipeline by identifying, evaluating, and acquiring land for new solar and wind energy projects throughout the United States. Jesse has spent the following 7 years developing and originating solar, wind, and energy storage projects across the country. Mr. Marshall has a Bachelor's of Arts in Geography from the University of California, Santa Barbara.

Matt Handel – Matt Handel is a Vice President of Development for NextEra, with responsibility for utility-scale solar, distributed generation and energy storage development. He has been with NextEra for 14 years. From 2001 through 2006, he served as Vice President of Structured Transactions within NextEra's wholesale trading group working on long-dated customized power deals. From 2006 through 2009, he served as Vice President of Northeast Generation, where he had commercial responsibility for a 3-gigawatt portfolio of merchant generating assets, including nuclear, hydro, combined cycle, and natural gas peaking plants in NEPOOL, PJM and the NYISO. In 2009, he was named Vice President of Solar Development with responsibility for growing the utility-scale solar business. In 2012, the solar effort was expanded to include a distributed generation division focused on non-residential solar projects. In 2013, an energy storage business was added, which focuses on both grid connected projects and behind-the-meter storage applications. By the end of 2016, NextEra will have developed and constructed over 2 gigawatts of solar and storage projects throughout the U.S. and Canada representing over $6 billion in capital deployed across nine states and Ontario. Prior to joining NextEra, Mr. Handel was a lawyer in New York and then a brewery owner in Colorado. He is a graduate of Stanford University and Columbia Law School.

Mike Pappalardo – Mr. Pappalardo is an Environmental Services Manager for NextEra's Environmental Services Department. His responsibilities include permitting NextEra projects in the western United States, primarily in the Pacific Northwest, California, and Wyoming. Mr. Pappalardo joined the Company in 2008 and is based in Eugene, Oregon. Mr. Pappalardo has 28 years of experience in environmental permitting and the development of natural resource related projects in the continental United States, Alaska, Hawaii, and South America. He began working in renewable energy in 2001 on the Stateline Wind Project, and since then, he has worked on renewable energy

projects throughout the United States. His work at NextEra includes managing environmental permitting efforts, including the Stateline/Vansycle wind projects in Oregon and the 160 MW North Sky River Wind Energy Facility in California. Recently Mr. Pappalardo obtained permits for the 48 MW Golden Hills North Wind Energy Center in California. This effort began in 2009, and represents the third and final phase of NextEra's efforts to remove nearly three thousand "old technology" turbines and "repower" all of the company's assets with 102 modern turbines, generating approximately 210 MW. The successful repowering effort represents roughly 60 percent of the energy output at the Altamont Pass Wind Resource Area in California. Previously, Mr. Pappalardo was a Project Manager for CH2M Hill in Corvallis, Oregon, where he was the project manager responsible for obtaining amendments to the Stateline Site Certificate, as well as obtaining the Site Certificate for the 450 MW Biglow Wind Project in Sherman County, Oregon. Mr. Pappalardo also supported the permitting for the Klondike and Leaning Juniper wind projects in Oregon, and led the effort to permit the 100.8 MW Kittitas Valley and 273 MW Wildhorse wind projects in Washington. Before joining CH2M Hill, Mr. Pappalardo worked for Stoel Rives LLP, where he served as in-house technical consultant to the law firm's environmental practice group, and prior to that, he worked as a geologist and hydrogeologist throughout the western United States, Alaska, and Argentina. Mr. Pappalardo earned a Bachelor's of Science degree in Geology from the University of Oregon, and is a Registered Geologist in Oregon and a Licensed Geologist in Washington.

4.0 Qualifications of Known Contractors - OAR 345-021-0010(1)(d)(C)

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

At this point in time, the Certificate Holder has not selected a solar manufacturer for the Facility's solar panels, or a specific contractor to construct the Facility. This said, based on its team's vast experience and the parent company's portfolio as the largest provider of renewable energy in the world, the Certificate Holder will select qualified contractors, engineers, and manufacturers with experience in the solar industry.

NextEra has extensive relationships with all the major solar panel manufacturers, as well as with the chief building-of-plant contractors in the United States. NextEra has also relied on the input of external consultants with decades of relevant experience developing successful energy facilities in the Pacific Northwest.

5.0 Applicant's Past Performance - OAR 345-021-0010(1)(d)(D)

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

5.1 Construction and Operation

The Certificate Holder's management team have substantial experience in managing all aspects of development, preconstruction, and operational activities at multiple solar energy projects across the United States and Canada. NextEra entered the solar generation business in 1989 through its interest in Solar Electric Generating System, one of seven solar thermal projects sited in Kramer Junction and Harper Lake, California. The Certificate Holder's team can rely on a deep bench of corporate professionals who manage more than 90 solar projects (with ownership interest) with a total net generating capacity of more than 2,000 MW of owned solar generation energy facilities across the United States and Canada. NextEra also includes more than 5,000 professionals working in various departments, including operations and maintenance, development, land services, environmental services, construction and engineering, and in-house corporate legal services. Additionally, the Facility's team can rely on WindLogics an indirect, wholly owned subsidiary of NextEra and one of the wind industry's premier meteorological firms, with core competencies in meteorology, applied mathematics, and data analytics.

5.2 Regulatory Compliance

In previous pre-construction activities, neither the Certificate Holder, nor its managers, have been in violation of any rules or regulations.

6.0 Warranty to Secure Necessary Expertise - OAR 345-021-0010(1)(d)(E)

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

Not applicable.

7.0 ISO Certified Program – OAR 345-021-0010(1)(d)(F)

If the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program, a description of the program.

The Certificate Holder does not propose to design, construct, or operate the Facility according to an International Organization for Standardization (ISO) 9000 or ISO 14000 certified program.

8.0 Mitigation – OAR 345-021-0010(1)(d)(G)

OAR 345-021-0010(1)(d)(G) If the applicant relies on mitigation to demonstrate compliance with any standards of Division 22 or 24 of this chapter, evidence that the applicant can successfully complete such proposed mitigation, including past experience with other projects and the qualifications and experience of personnel upon whom the applicant will rely, to the extent that the identities of such persons are known at the date of submittal.

The Certificate Holder relies on mitigation to demonstrate compliance with several approval standards, most importantly with the Oregon Department of Fish and Wildlife fish and wildlife habitat goals and standards, addressed in Exhibit P of this request. The Certificate Holder's managers have substantial experience in designing habitat mitigation projects. The Certificate Holder will rely on the experience and expertise of Mr. Mike Pappalardo and Northwest Wildlife Consultants, Inc. (NWC) to successfully complete the mitigation required for the Facility. Additionally, the Certificate Holder has acquired a conservation easement in Gilliam County for 200 acres, within a 320-acre parcel, and with the ability to expand the mitigation parcel if needed (Attachment D-1).

As noted above in Section 3.0, Mr. Pappalardo has approximately 28 years of experience in environmental management, including more than 16 years of experience permitting wind energy projects and more than 10 years of experience permitting solar energy projects. He has successfully obtained or amended Site Certificates and county Conditional Use Permits with mitigation requirements for the Biglow Canyon and Stateline I, II, and III wind projects in Oregon, as well as for the Vasco, Golden Hills, Golden Hills North, North Sky River and Palm Springs Repower wind projects in California, and McCoy and Genesis solar projects in California.

The Certificate Holder is working with Tetra Tech, Inc. to determine impacts and related mitigation requirements. Tetra Tech personnel have extensive experience in determining mitigation needs at numerous energy facilities in Oregon and throughout the Country.

The Certificate Holder is working with NWC to implement habitat mitigation. NWC and its personnel (Karen Kronner, Bob Gritski, and others) have demonstrated success at all aspects of such a mitigation process as required for the Facility, including the drafting of initial concepts, contacting owners of potentially suitable mitigation areas, assessing (in concert with appropriate agency personnel) the suitability of such lands, implementation of protection and enhancement

measures, monitoring of effectiveness, and validation of successful completion. NWC has completed some or all of these mitigation components on a number of wind energy projects in Oregon and Washington, including both those associated with county Conditional Use Permits and Council projects; some of these are: Stateline 2, Stateline 3, Klondike III, Leaning Juniper I, Leaning Juniper II, Pebble Springs, Willow, Star Point, Rattlesnake Road, and Wheat Field.

Attachment D-1. Wheatridge Habitat Mitigation Area Option Recording Memo with Umatilla County

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After Recording this Memorandum Return to:
Wheatridge Wind Energy, LLC
3000 El Camino Real
5 Palo Alto Square, Suite 700
Palo Alto, CA 94306
Attn: Aleathia M. Hoster

MEMORANDUM OF OPTION FOR CONSERVATION EASEMENT

On the 28 day of November, 2014, Robert Gritski and Karen Kronner, as Owners, granted to Wheatridge Wind Energy, LLC, a Delaware limited liability company, as Optionee, an option to acquire one or more Conservation Easements to no more than 200 acres of the following described Gilliam County, Oregon real property, to which reference is made for all statements, matters, and things therein contained:

See Exhibit A which is attached hereto and by this reference incorporated herein.

The term of the option shall expire no later than eight years after the date of this memorandum first set forth above. Reference should be made to the option agreement for further particulars.

DATED this 28 day of November, 2014.

Optionee: Wheatridge Wind Energy, LLC

By: _____
Andrew O'Connell
President

STATE OF OREGON)
) ss.
County of MULTNOMAH)

Before me on this 28 day of NOVEMBER, 2014, personally appeared the above named Andrew O'Connell, President of Wheatridge Wind Energy, LLC and acknowledged on its behalf the foregoing instrument to be his voluntary act and deed.

_____
Notary Public for Oregon
My Commission Expires: 6/5/15

OFFICIAL SEAL
CALEB J TOMULTY
NOTARY PUBLIC - OREGON
COMMISSION NO. 458974
MY COMMISSION EXPIRES JUNE 05, 2015

Owners:

By: Robert Gritski
Name: Robert Gritski

By: Karen Kronner
Name: Karen Kronner

STATE OF OREGON)
) ss.
County of Umatilla)

Before me on this 19 day of December, 2014, personally appeared the above named of Robert Gritski and Karen Kronner, and acknowledged the foregoing instrument to be their voluntary act and deed.

Paula M. Hancock
Notary Public for Oregon
My Commission Expires: May 19, 2016

OFFICIAL SEAL
PAULA M HANCOCK
NOTARY PUBLIC-OREGON
COMMISSION NO. 467618
MY COMMISSION EXPIRES MAY 19, 2016

EXHIBIT A

A portion of that certain real property situated in Gilliam County, Oregon with Assessor's Parcel Number 1S21E 2901, described as follows:

Section 14: NW¼, EXCEPT: Deed Book W, page 346, beginning at a point 4 chains West and 1.93 chains South of the Northeast corner of the NW¼ at a stone 8x8x15 inches marked with "X" on top, running thence South 78° 28' East, 2 chains to iron pin in ground; thence South 73° East, 1 chain to iron pin, thence South 57° East 50 links to iron pin, thence South 47° East 40 links to Rock Creek; thence South 47° East 3.40 chains to Rock Creek Bluff to rock marked "C" (which rock is witnessed by rock in bluff marked "X" 18.5 links below); thence in a Southeasterly direction along Rock Creek Bluff to where said bluff intersects the North and South center line of Section 14; thence North on said line to intersection of county road; thence West along South line of said county road a distance of 4 chains from the Northeast corner of NW¼; thence South to the place of beginning.

ALSO, that part of the S½ lying South of a line described as follows and that part of the N½SW¼ lying North of a line described as follows:

Starting at a point which is the Northwest corner of the S½NW¼SW¼ of Section 14; thence 90° East 2200 feet excluding the North tip of a plowed field (approximately 1½ acres), thence 160° South 1300 feet; thence 135° Southeast approximately 2800 feet to a point which is the Southwest corner of the N½NW¼NW¼, Section 24, same township and range; thence East along the S½NW¼NW¼, Section 24, to the property line.

Section 23: All of the N½, EXCEPT the parcel in the NE¼NE¼ which is North and East of the line which begins at the Northwest corner of S½NW¼SW¼ and proceeds Southeasterly as described in the second paragraph of the description in Section 14, ALSO, the NE¼SW¼; SE¼.

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Exhibit E

Permits for Construction and Operation

Wheatridge Wind Energy Facility
November 2018

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

TETRA TECH

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Table of Contents

Acronyms and Abbreviations

ACDP	Air Contaminant Discharge Permit
ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Oregon Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MCZO	Morrow County Zoning Ordinance
MW	Megawatt
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and maintenance
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statutes
RFA 4	Request for Amendment 4

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. As part of Request for Amendment 4 (RFA 4) to the Facility's Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and all other laws and incorporated conditions of the Site Certificate. This exhibit, Exhibit E, provides information about permits that may be needed for construction and operation of the proposed changes in RFA 4, to meet the submittal requirements of Oregon Administrative Rule (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 this exhibit are identified in each applicable exhibit and incorporated into the Site Certificate Conditions, as necessary, to meet Council standards and other laws governed by the Site Certificate.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

2.0 Identification and Description of Required Permits – OAR 345-021-0010(1)(e)(A)(B)

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

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

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

Where relevant, each of the permits below references the appropriate exhibit in RFA 4.

2.1 Federal Permits

Responsible Agency: Federal Aviation Administration
Permit: Notice of Proposed Construction or Alteration (Form 7460-1)
Authority: Federal Aviation Act of 1958 (14 U.S.C. Section 44718); 14 CFR Section 77
Contact Information: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group Dan.Shoemaker@faa.gov (425) 227-2791
Description: Applicant is proposing construction or alterations that may affect navigable airspace must file a Notice of Proposed Construction or Alteration with the Federal Aviation Administration. Because of potential glare from the solar arrays and the proximity to the Boardman Bombing Range, these notices will be filed (See Site Certificate Condition PRE-PS-04).
Relevant Exhibit: Exhibit K

Responsible Agency: Federal Aviation Administration
Permit: Supplemental Notice of Actual Construction or Alteration (Form 7460-2)
Authority: Federal Aviation Act of 1958 (14 U.S.C. Section 44718); 14 CFR Section 77
Contact Information: Dan Shoemaker Airspace Specialist Seattle Obstruction Evaluation Group Dan.Shoemaker@faa.gov (425) 227-2791
Description: Submission of the Supplemental Notice of Actual Construction or Alteration form must be filed within 5 days after construction reaches its greatest height as specified in the No Hazard Determination (See Site Certificate Condition PRE-PS-04). This federal process is not within the Council's jurisdiction and therefore should not be governed by the site certificate.
Relevant Exhibit: Exhibit K

2.2 State Permits Not Federally Delegated

Responsible Agency: Oregon Department of Environmental Quality
Permit: General Water Pollution Control Facilities Permit, WPCF-1700-B, Wash Water Discharge from Equipment Cleaning; WPCF-1000, Gravel Mining and Batch Plant
Authority: Oregon Revised Statutes (ORS) 468B; OAR Chapter 340, Division 45
Contact Information: Oregon Department of Environmental Quality, Eastern Region 700 SE Emigrant, Suite 330 Pendleton, OR 97801 (541) 276-4063
Description: The WPCF 1700-B permit covers equipment-cleaning activities that discharge wash water by means of evaporation, seepage, or irrigation. If needed for the periodic washing of panels, the permit would be secured by Applicant's third-party contract who will conduct the washing activities. Therefore, this permit should not be included in and governed by the site certificate. The WPCF-1000 permit authorizes operation of a wastewater collection, treatment, control, and disposal system for nonmetallic mineral quarrying and mining operations, including asphalt-mix batch plants and concrete batch plants. If a temporary batch plant is required for Facility construction, the Facility's third-party contractor will obtain a WPCF-1000 permit from the Oregon Department of Environmental Quality, which would therefore not be included in and governed by the site certificate.

Responsible Agency: Oregon Department of Energy; Energy Facility Siting Council
Permit: Amendment to Energy Facility Site Certificate
Authority: ORS 469.300 et seq.; OAR Chapter 345, Divisions 1, 21-24, 27
Contact Information: Andrea Goodwin Energy Facility Analyst Oregon Department of Energy 550 Capitol Street NE, 1st Floor Salem, OR 97301 (503) 302 8834 andrea.goodwin@odoe.state.or.us
Description: The Site Certificate is the subject of this amendment request.

Responsible Agency: Oregon Parks and Recreation Department – State Historic Preservation Office
Permit: Archaeological Excavation Permit
Authority: ORS 97.745 (Indian Graves and Protected Objects); ORS 358.920 (Archaeological Objects and Sites); ORS 390.010 (Outdoor Recreation); ORS 390.235 (Archaeological Sites and Historical Material); and OAR Chapter 736, Division 51 (Archaeological Permits).
Contact Information: Dr. Dennis Griffin State Archaeologist Oregon Department of Parks and Recreation 725 Summer Street, NE, Suite C Salem, OR 97301 (503) 986-0674 dennis.griffin@state.or.us
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. Because the Facility has been designed to avoid all known archaeological resources, this permit would be needed only in the event that a previously unknown archaeological resource is discovered during construction, and is located such that it cannot be avoided. If there is an inadvertent discovery during construction, the Certificate Holder and the construction contractor will coordinate directly with State Historic Preservation Office regarding appropriate treatment and will determine at that time whether this permit would be necessary. This permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit S

Responsible Agency: Oregon Water Resources Department
Permit: Water Right Limited Use License
Authority: ORS Chapters 536 through 540 (Water Resources/Water Rights); and OAR Chapter 690 (Water Resources Department), Divisions 1 through 410.
Contact Information: Tim Wallin Water Rights Manager Oregon Water Resources Department Division of Water Rights 725 Summer Street NE, Suite A Salem, OR 97301 (503) 986-0801 timothy.wallin@state.or.us
Description: If water for construction is not available from existing permitted sources, the Certificate Holder could seek temporary authorization for water use. However, the Certificate Holder does not anticipate that a Limited Use License would be needed because water for construction will be obtained from municipal suppliers with sufficient existing water rights. Information regarding the municipal water providers that would supply water for Facility construction is provided in Exhibit O. In the event such an authorization is needed, the Applicant or third-party contractor would work directly with the Oregon Water Resources Department and therefore the authorization should not be included in and governed by the site certificate.
Relevant Exhibit: Exhibit O

Responsible Agency: Oregon Department of Transportation
Permit: Oversize Load Movement Permit/Load Registration
Authority: ORS 818.030, OAR 734 Division 82
Contact Information: Christy Jordan Over-Dimensional Permit Unit and Freight Mobility Manager Oregon Department of Transportation, Motor Carrier Transportation Division 550 Capitol Street Salem, OR 97301-2530 (503) 378-6192 Christy.A.Jordan@odot.state.or.us
Description: This permit will be required to transport loads that exceed standard size and/or weight limits on state and federal highways. Movement of construction cranes and other equipment and materials such as substation equipment is likely to require this permit. This permit will be obtained by the construction contractor or designated transportation company(ies) prior to the movement of each oversize/overweight load and should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit U

Responsible Agency: Oregon Department of Transportation
Permit: Permit to Occupy or Perform Operations Upon a State Highway
Authority: OAR Chapter 734, Division 55 (Pole Lines, Buried Cables, and Miscellaneous Facilities and Operations)
Contact Information: Tina Juel Oregon Department of Transportation Utility and Miscellaneous Permit Specialist Oregon Department of Transportation Office of Maintenance and Operations 800 Airport Road SE Salem, OR 97301 (503) 986-3031 Tina.Juel@odot.state.or.us
Description: This permit would be required to install utilities within or across the right-of-way of a state highway. This permit will be required because of the crossing or OR-207 by the 34.5-kV collection line(s). This permit will be obtained by the construction contractor prior to stringing the collection line(s) across the state highway and should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit U

Responsible Agency: Oregon Department of Transportation
Permit: Access Management Permit
Authority: OAR 734 Division 51
Contact Information: Marcus Berlin Access Management Planner Oregon Department of Transportation – Access Management Unit 4040 Fairview Industrial Drive SE, MS 1 Salem, OR 97301-1142 (503) 986-3914 marcus.a.berlin@odot.state.or.us
Description: A state access permit would be required for construction of a Facility access road that would that intersect with a state highway, or if improvements to an existing public road would substantially alter an intersection with a state highway. The access permit would be issued by the local Oregon Department of Transportation District Offices. Based on the current Facility layout a state access permit will be required. This permit would be obtained by the Certificate Holder or its designated construction contractor prior to constructing or improving a state highway access; it should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit U

Responsible Agency: Oregon Department Consumer & Business Services, Building Codes Division
Permit: State Electrical Permit
Authority: OAR 918 Division 309
Contact Information: BCD Pendleton Office 800 SE Emigrant Avenue, Suite 360 Pendleton, OR 97801 Phone: 541-276-7814
Description: A state electrical permit is required prior to the installation of electric, phone or cable service to the operations and maintenance (O&M) buildings or the Facility substations. Electrical permits may be obtained in person at the Building Codes Division Pendleton office, or online through the state's e-permitting system (available at: http://www.oregon-epermitting.info/). Electrical permits for facilities in Morrow County may also be obtained through the City of Boardman Building Department (see below under Local Permits). A state electrical permit will be obtained by the construction contractor prior to construction of each component for which electrical, phone or cable service would be required and should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit E

2.3 State Permits Federally Delegated

Responsible Agency: Oregon Department of Environmental Quality
Permit: National Pollutant Discharge Elimination System (NPDES) Permit
Authority: Clean Water Act, Section 402 (33 U.S.C. Section 122); 40 CFR Section 122; ORS 468 and 468B; OAR Chapter 340, Divisions 14, 41, 45, 52, and 55
Contact Information: Jackie Ray Oregon Department of Environmental Quality 700 SE Emigrant, Suite 330 Pendleton, OR 97801 (541) 278-4605 Ray.jackie@deq.state.or.us
Description: The US Environmental Protection Agency has delegated authority to the Oregon Department of Environmental Quality to issue NPDES Storm Water Discharge permits for construction and operation activities. This permit is required for construction activity that would disturb more than 0.5 acres of land. The Applicant submitted an NPDES permit as Attachment I-2 to Exhibit I of the ASC. The Certificate Holder will obtain a final permit based on final design, consistent with Site Certificate Condition PRE-SP-01, directly from the Oregon Department of Environmental Quality and should not be included in or governed by the Site Certificate.

Relevant Exhibit: Exhibit I, Exhibit J

2.4 Local Permits

The Certificate Holder intends to satisfy the Council's land use standard by seeking a Council determination of compliance with the land use standards under ORS 469.504(1)(b). The Certificate Holder will provide information necessary to demonstrate compliance with the applicable substantive criteria.

Responsible Agency: Morrow County Planning
Permit: Conditional Use Permit
Authority: Morrow County Zoning Ordinance (MCZO) Section 3.010(D), Exclusive Farm Use Zone; MCZO Article 6, Conditional Uses
Contact Information: Carla McLane Planning Director Morrow County – Planning Department 205 NE Third Street Irrigon, OR 97844 (541) 922-4624 cmclane@co.morrow.or.us
Description: Construction of the Facility in Morrow County would require a Conditional Use Permit. Under ORS 469.401(3), following issuance of the Site Certificate, the County, upon the applicant'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. This permit should be included in and governed by the Site Certificate.
Relevant Exhibit: Exhibit K

Responsible Agency: Morrow County Planning/ City of Boardman Building Department
Permit: Building Permit for Facility construction
Authority: OAR 734 Division 51

Contact Information:
Brett Cook
Building Official
City of Boardman Building Department
200 City Center Circle
PO Box 229
Boardman, OR 97818
(541) 481-9252
brettc@cityofboardman.com

Description: Building permits are required prior to beginning construction of structures including solar panel and substation foundations and the O&M buildings. 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 construction contractor prior to construction of each component for which a building permit would be required; this permit should not be included in or governed by the Site Certificate.

Relevant Exhibit: Exhibit K

Responsible Agency: Morrow County Public Works

Permit: Utility Crossing Permit

Authority: ORS 374.305

Contact Information:
Matt Scrivner
Public Works Director
Morrow County Public Works
PO Box 428
Lexington, OR 97839
(541) 989-9500
mscrivner@co.morrow.or.us

Description: A Utility Crossing permit is required any time a utility is constructed within or across a County road right-of-way, and will be required for locations where Facility electrical collection lines or the transmission lines would cross county roads. This permit will be obtained by the construction contractor prior to construction of each crossing of a county road by electrical collector lines or the transmission lines. This permit should not be included in or governed by the Site Certificate.

Relevant Exhibit: Exhibit K

Responsible Agency: Morrow County Public Works
Permit: Access Approach Site Permit
Authority: ORS 374.305, Morrow County Zoning Ordinance Section 4.010(B)
Contact Information: Matt Scrivner Public Works Director Morrow County Public Works PO Box 428 Lexington, OR 97839 (541) 989-9500 mscrivner@co.morrow.or.us
Description: An Approach Site Approval will be required for each location where Facility access roads intersect with county roads, or if necessary upgrades to existing access roads affect a county road. This permit will be obtained by the construction contractor prior to construction of each access road intersection with a county road. This permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit K, Exhibit U

Responsible Agency: Morrow County Planning Department
Permit: Zoning Permit
Authority: MCZO Section 1.050, Zoning Permit; MCZO Article 1, Introductory Provisions
Contact Information: Carla McLane Planning Director Morrow County – Planning Department 205 NE Third Street Irrigon, OR 97844 (541) 922-4624 cmclane@co.morrow.or.us
Description: This permit is required prior to the construction, reconstruction, alteration, or change of use of any structure larger than 100 square feet. Compliance with the standards contained in Article 1 of the MCZO, as well as other substantive criteria applicable to the proposed Facility will be in Exhibit K of RFA 4. The Certificate Holder has elected to obtain a Council determination under ORS Chapter 469.504(1)(b). This permit will be issued after the site certificate for RFA 4 has been issued and should be included in and governed by the Site Certificate (see Site Certificate Conditions PRE-LU-01 and PRE-LU-02).
Relevant Exhibit: Exhibit K

Responsible Agency: City of Boardman (for Morrow County)
Permit: Building and Utility Permit
Authority: ORS Chapter 455 Building Code
Contact Information: Brett Cook Building Official City of Boardman Building Department 200 City Center Circle PO Box 229 Boardman, OR 97818 (541) 481-9252 brettc@cityofboardman.com
Description: This permit is applicable to aboveground Facility structures. 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 construction contractor prior to construction of each component for which a building permit would be required; this permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit K

Responsible Agency: Morrow County Public Works
Permit: Construction Permit to Build on Right-of-Way
Authority: Morrow County Zoning Ordinance Section 4.010(B)
Contact Information: Matt Scrivner Public Works Director Morrow County Public Works PO Box 428 Lexington, OR 97839 (541) 989-9500 mscrivner@co.morrow.or.us
Description: A construction permit is required to make improvements to access roads that intersect with county road rights-of-way or to make improvements to existing public roads. This permit will be obtained by the construction contractor prior to construction of each access road intersection with a county road. This permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit K

Responsible Agency: Morrow County Public Works
Permit: Oversize Load Movement Permit
Authority: Morrow County Zoning Ordinance Section 4.010(B)
Contact Information: Matt Scrivner Public Works Director Morrow County Public Works PO Box 428 Lexington, OR 97839 (541) 989-9500 mscrivner@co.morrow.or.us
Description: This permit will be required to transport loads that exceed standard size and/or weight limits on county roads. Movement of construction cranes and other equipment and materials such as substation equipment is likely to require this permit. This permit will be obtained by the construction contractor or designated transportation company(ies) prior to the movement of each oversize/overweight load and should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit K, Exhibit U

3.0 Permit Applications Not Federally Delegated – OAR 345-021-0010(1)(e)(C)(i)(ii)

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

(i) In Exhibit J for permits related to wetlands.

Exhibit J provides evidence that no wetlands permits are required.

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

Exhibit O contains a discussion of potential authorizations related to water rights.

4.0 Permit Applications Federally Delegated – OAR 345-021-0010(1)(e)(D)

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

The Certificate Holder submitted an NPDES permit as Attachment I-2 to Exhibit I of the ASC. The Certificate Holder will obtain a final permit based on final design, consistent with Site Certificate Condition PRE-SP-01, directly from the Oregon Department of Environmental Quality.

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

OAR 345-021-0010(1)(e)(E) If the applicant relies on a state or local government permit or approval issued to a third party, identification of any such third-party permit and for each:

(i) Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.

(ii) Evidence that the third party has, or has a reasonable likelihood of obtaining, the necessary permit.

(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 may rely on its construction contractors to obtain some required permits, as discussed above. Additional permits that may be obtained, either by the construction contractor or by a third party, are those permits related to the use of concrete batch plants. Per the Site Certificate, the Certificate Holder may utilize one or more temporary concrete batch plant areas, located within the construction yard area. The temporary concrete batch plants are permitted and operated by the selected contractor. The Certificate Holder understands that mobile concrete batch plant sites may be covered by the Facility's NPDES 1200-C permit, and that an NPDES 1200-A permit would be required for each mobile batch plant if the plants were to discharge stormwater from a point source to surface water or to a conveyance system that discharges to surface water. Additionally, each mobile batch plant would carry its own associated Air Contaminant Discharge Permit.

Responsible Agency: Morrow County Planning Department
Permit: Conditional Use Permit for use of temporary concrete batch plant
Authority: Morrow County Zoning Sections 3.010, 3.070
Contact Information: Carla McLane Planning Director Morrow County – Planning Department 205 NE Third Street Irrigon, OR 97844 (541) 922-4624 cmclane@co.morrow.or.us
Description: A Conditional Use Permit is required in order to site and use a mobile concrete batch plant in Morrow County. If the use of mobile concrete batch plants is determined to be necessary, a Conditional Use Permit would be required to establish and use temporary concrete batch plants to support construction of the Facility. The construction contractor selected to supply and operate mobile concreate batch plants during Facility construction would obtain and maintain any necessary permits required by Morrow County. This permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit K

Responsible Agency: Umatilla Electric Cooperative or Umatilla Electric Cooperative in partnership with Columbia Basin Electric Cooperative
Permit: Crossing Permit
Authority:
Contact Information: Robert Echenrode, General Manager & CEO Umatilla Electric Cooperative 745 West Elm Avenue PO Box 1148 Hermiston, OR 97838
Description: The Certificate Holder anticipates that the Facility's collection system, an overhead or underground 34.5kV line, will potentially cross a proposed Umatilla Electric Cooperative transmission line. There is no formal permit application and the design information, once finalized, will need to be submitted to the engineering team at Umatilla Electric Cooperative for review.
Relevant Exhibit: Exhibit B

6.0 Third Party Federal Permits – OAR 345-021-0010(1)(e)(F)

OAR 345-021-0010(1)(e)(F) If the applicant relies on a federally-delegated permit issued to a third party, identification of any such third-party permit and for each:

(i) Evidence that the applicant has, or has a reasonable likelihood of entering into, a contract or other agreement with the third party for access to the resource or service to be secured by that permit.

(ii) Evidence that the responsible agency has received a permit application.

(iii) The estimated the date when the responsible agency will complete its review and issue a permit decision.

Responsible Agency: Oregon Department of Environmental Quality
Permit: Air Contaminant Discharge Permit (ACDP)
Authority: OAR Chapter 340, Division 216
Contact Information: Jackie Ray Oregon Department of Environmental Quality 800 SE Emigrant, Suite 330 Pendleton, OR 97801 (541) 278-4605 Ray.jackie@deq.state.or.us
Description: If mobile concrete batch plants are used, each mobile concrete batch plant used will require an associated ACDP. Depending on the anticipated volume of concrete to be made by each plant, either a Basic or General ACDP would be required. This permit would be associated with the mobile concrete batch plant and moves with it rather than being associated with a particular location. The contractor selected to supply and operate batch plants will obtain and maintain the necessary permit prior to construction. This permit should not be included in or governed by the Site Certificate.
Relevant Exhibit: Exhibit V

Responsible Agency: Oregon Department of Environmental Quality
Permit: NPDES Permit
Authority: OAR Chapter 340, Division 45
Contact Information: Jackie Ray Oregon Department of Environmental Quality 700 SE Emigrant, Suite 330 Pendleton, OR 97801 (541) 278-4605

Ray.jackie@deq.state.or.us
Description: Operating a mobile concrete batch plant requires an NPDES permit for each location where it is set up. If mobile concrete batch plants are used for construction of the Facility, they will be located within the construction staging yards and will be covered by the overall Facility's NPDES permit instead of having an independent permit. The Certificate Holder prepared an NPDES 1200-C permit application for the Facility included as Attachment I-2 to Exhibit I of the ASC.
Relevant Exhibit: Exhibit V

7.0 Third-Party Entities

The entities and organization listed below do not require a permit as required by OAR 345-021-0010(1)(e). These entities are included in this exhibit as they are referenced in multiple exhibits in the ASC. These listed entities are examples, provided in this exhibit at the request of the Oregon Department of Energy, and should not be considered a definitive list of entities with whom the Certificate Holder may choose to utilize at the time of construction of the Facility.

Responsible Agency: Hermiston Department of Public Works
Permit: None
Authority: Water Right Certificate Number: G6831
Contact Information: Roy Bicknell Water Superintendent City of Hermiston Department of Public Works 180 NE 2nd Avenue Hermiston, OR 97838 541-567-5521 water@hermiston.or.us
Description: Provider of water for use in construction and dust control. There is no permit associated with this entity as they are licensed to supply water for industrial use under their existing water right certificates. Attachment O-2 in Exhibit O of the ASC is a record of correspondence with the Water Superintendent at the City of Hermiston confirming they will be able to provide service to the Facility.
Relevant Exhibit: Exhibit O

Responsible Agency: Stanfield Department of Public Works
Permit: None
Authority: Water Right Certificate Numbers: 12224 and 66058
Contact Information:

Scott Morris Public Works Director City of Stanfield City Hall 160 S Main Street Stanfield, OR 97875 541-449-3831 smorris@cityofstanfield.com
Description: Provider of water for use in construction and dust control. There is no permit associated with this entity as they are licensed to supply water for industrial use under their existing water right certificates.
Relevant Exhibit: Exhibit O

Responsible Agency: Boardman Department of Public Works
Permit: None
Authority: Water Right Certificate Numbers: 40336 and 2624
Contact Information: Dave Winters Public Works Director 200 City Center Circle PO Box 229 Boardman, OR 97818 541-481-9252 publicworks@cityofboardman.com
Description: Provider of water for use in construction and dust control. There is no permit associated with this entity as they are licensed to supply water for industrial use under their existing water right certificates.
Relevant Exhibit: Exhibit O

Responsible Agency: Port of Morrow
Permit: None
Authority: Water Right Certificate Number: G7158, G8263, G5332, G10975, G12729, G13283, G10312, G4626, G10312, G4626, G12370
Contact Information: Gary Neal General Manager 2 Marine Drive PO Box 200

Boardman, OR 97818 541-481-2679 garyn@portofmorrow.com
Description: Provider of water for use in construction and dust control. There is no permit associated with this entity as they are licensed to supply water for industrial use under their existing water right certificates.
Relevant Exhibit: Exhibit O

Responsible Agency: W.I. Construction Inc.
Permit: None
Authority:
Contact Information: Jack Ingram President W.I. Construction, Inc. 18122 Hulden Road Arlington, OR 97821 541-454-2244
Description: Provider of aggregate and concrete for Facility construction. There is no permit associated with this entity as they are licensed to supply aggregate and any permits associated with on-site concrete batch plants would be acquired and maintained by the construction contractor through either Morrow or Umatilla counties.
Relevant Exhibit: Exhibits G and U

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

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

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.

Exhibit F

Property Owners of Record

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit F will be completed as part of a supplemental submittal.

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Exhibit G

Materials Analysis

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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List of Tables

Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	megawatt
O&M	Operations and maintenance
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
RFA 2	Request for Amendment 2
RFA 3	Request for Amendment 3
RFA 4	Request for Amendment 4
SPCC	Spill Prevention Control and Countermeasures

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

Exhibit G provides the information required by OAR 345- 021-0010(1)(g) in support of RFA 4. Similar to with wind turbines, the Certificate Holder is requesting to permit a range of technology in order to preserve permitting flexibility and will stipulate the precise details of photovoltaic solar energy generation and related and supporting facilities including energy storage during final design and engineering prior to construction. Therefore, this exhibit analyzes the maximum amount of materials anticipated within the solar micrositing corridors (Amended Site Boundary) to address the maximum impact. To the extent it is representative of the best available information, analysis in this Exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate (ASC) (Wheatridge Wind Energy, LLC 2015), previous RFAs, and Oregon Department of Energy Final Orders to demonstrate that the Facility, as proposed, continues to comply with applicable Site Certificate conditions and the approval standard in OAR 345-022-0010(1)(g).

Exhibit B provides the Facility description, which includes major components and systems and a description of related or supporting facilities. The major components and systems include:

- Photovoltaic Modules and Racking; and
- Electrical Infrastructure including combiner boxes and conduits, inverters, and transformers;

The related or supporting facilities include:

- Collection systems, including underground 34.5-kilovolt cables and overhead collector lines;
- Distributed energy storage, including lithium-ion batteries in concrete containers;
- A collector substation expansion of 5 acres which will provide space for additional transformers and switches and protective relay and metering equipment; and
- Service roads and gates within the proposed expanded site boundary and a 100-foot wide cleared area including a perimeter road around the solar arrays. The perimeter road will be bordered by an up to 8-foot-high chain-link security fence with locked gates.

The information summarized in this exhibit and described in RFA 4 demonstrates that the Facility, as proposed, can be designed, engineered, constructed, operated, and retired in a manner that satisfies the applicable Council standards. The proposed changes in RFA 4 do not alter the Certificate Holder's ability to comply with the Council's earlier findings and approved conditions in the previously amended site certificates.

2.0 Materials Inventory – OAR 345-021-0010(1)(g)(A)

OAR 345-021-0010(1)(g) A materials analysis including:

OAR 345-021-0010(1)(g)(A) An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation.

2.1 Construction Materials

In addition to the construction materials identified in Exhibit G of the Final ASC and RFAs 2 and 3, this section describes the materials needed to support the solar arrays within the Amended Site Boundary. The solar arrays will be composed of a combination of solar modules, tracker systems, posts, and related electrical equipment. The solar modules will be composed of mono- or polycrystalline cells supported on non-specular, galvanized steel racks. The modules are inert and will not introduce any hazardous materials to the Facility. Each tracker will be supported by steel posts. Other onsite equipment will include overhead and buried conduits, inverters, combiners, and transformers.

The distributed energy storage system will contain chemical electrolyte. Lithium-ion batteries 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 processer, and serves as leak-proof secondary

containment. Modules are placed in anchored racks within concrete containers. Although leaks from the modules are very unlikely because any leak would require failure of the individual cell(s) as well as the sealed module, any material that might leak from the cell into the module and then to the floor of the container would easily be contained within the container. Typically, each rack houses 12 battery modules along with a switchgear assembly. The lithium-ion batteries will be manufactured offsite and will be shipped to the site as self-enclosed prefabricated modules, which will be installed and electrically connected onsite.

Materials used to construct the solar array foundations, support structures, the collector substation expansion, and service roads will consist of rock and gravel (aggregate), concrete, steel, steel cabling, and other typical construction materials similar to those used for construction of wind turbines that the Council has already approved. As required by Condition PRE-OE-05, the Certificate Holder will provide proof of the aggregate source and county permits. The amount of concrete and water used for concrete mixing will vary depending on the design of the solar array. Concrete foundations will be needed for the solar modules, transformer pads, and the catchment, and distributed energy storage containers. The amount of concrete will vary depending on the configuration of the energy storage system.

Table G-1 provides a list of industrial materials that would be used during Facility construction, based on current engineering estimates. The amount of water used for concrete is discussed in Exhibit O. Solid wastes generated and flowing out of the Facility during construction are outlined in Exhibit V.

Table G-1. Inventory of Construction Materials

Material	Ultimate Disposition	Units	Quantity
Aggregate	Remains on-site as graveled area associated with battery storage, access roads, perimeter road, and substation expansion.	tons	2,600 tons (5-acres of battery storage); 46,881 tons (72,804 linear feet of access and perimeter roads); 2,600 tons (5-acre expansion of substation): 52,081 tons total
Concrete	Remains on site as foundation for DC storage, inverter & Transformer, and substation	cubic yards (yd^3)	3,936 yd^3 for foundations for battery storage, inverter, and transformer; 500 yd^3 for substation foundation 4,436 yd^3 total
Solar block	Throughout Site Boundary	blocks	41
Solar modules	Throughout each solar module block	modules	10,173 solar modules per block; 14 blocks; 417,093 solar modules total
Solar tracker mounting table	Throughout each solar module block	tracker mounting table	6,000 (70 modules per tracker)

Material	Ultimate Disposition	Units	Quantity
Steel solar module tracking posts	Throughout each solar module block	posts	195,000
Lithium-ion battery racks	Throughout each solar module block	racks	600
Concrete battery storage containers	Throughout each solar module block	containers	23
Combiner boxes	Throughout each solar module block	combiner boxes	748
Overhead or Underground Collector lines	Throughout solar arrays	miles	20.83
Overhead or Underground collector lines	Between solar arrays and substation	miles	2.98
Inverters	Modular inverter enclosure	inverters	41
Transformers (34.5-kV)	Substation	transformers	41 (each inverter has a pad mounted transformer)
Solar area fencing	Will remain around solar area	feet	102,496

2.2 Operations

No substantial quantities of industrial materials will be brought onto or removed from the Facility site during operation of the solar array. The materials that will be brought onto or removed from the site will relate to maintenance or replacement of damaged equipment (e.g., solar module components, electrical equipment). Batteries within the distributed energy storage system will require periodic replacement. During the expected 50-year life cycle of the Facility, it is assumed that 11 battery racks per 1 MW will be replaced every 3 years. Operations materials would be delivered to the required location at the time needed. Table G-2 lists materials and amounts that will be used for operations and maintenance (O&M) of the solar array components.

Table G-2. Inventory of Operations Materials

Material	Units	Quantity	Ultimate Disposition
Lithium-ion batteries	racks	11 battery racks per 1 MW replaced every 3 years	Disposed of at approved facility

Material	Units	Quantity	Ultimate Disposition
Simple Green (general cleaner)	# gallons/year per installed MW	5	Stored in O&M building
Transformer oil	gallons	1,000 [1]	Within transformer boxes for cooling
1. Some inverters use dry-type transformers which don't have oil; others will range from 700-1,000 gallons depending on the size of the inverter.			

3.0 Hazardous Materials Handling and Management – OAR 345-021-0010(1)(g)(B)

OAR 345-021-0010(1)(g)(B) The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills.

During the construction or operations phases of the Facility, it may be necessary to use minor quantities of hazardous substances (materials requiring Safety Data Sheets). These materials would include small, but necessary, quantities of herbicide for use around the substation and solar arrays for weed control. All potentially hazardous substances, during both phases, would be used in a manner that is protective of human health, protective of the environment, and that complies with all applicable local, state, and federal environmental laws and regulations. For any necessary, potentially hazardous substance used during the Facility's construction or operation, Safety Data Sheets would be made available and located at the construction area or the relevant Facility component.

Extremely Hazardous Substances in excess of threshold planning quantities, highly toxic substances, or explosive materials would not be necessary to support either the construction or the operations phase of the Facility. Additionally, materials used during the construction and operations of the Facility would be selected so that they minimize the potential for producing "hazardous waste," as defined by the Resource Conservation and Recovery Act.

3.1 Construction Materials

Potentially hazardous substances are not expected to be used during the construction phase. The presence of any hazardous substances would be limited to the amounts of motor vehicle fuel and automotive fluids required to operate construction vehicles and equipment, as identified in the ASC. Potentially hazardous substances will not be permanently present within the construction areas in quantities that exceed Oregon State Fire Marshall Reportable Quantities.

As identified for the approved wind energy project, fuel for construction equipment would be delivered to the site via a specialized mobile vehicle by a licensed service contractor on an as-needed basis. Following the completion of fueling activities, these vehicles would not remain at the

on-site longer than necessary to complete their fueling tasks. Construction-based equipment would be regularly inspected to detect potential leaks or other issues that may require maintenance. Potentially hazardous substances related to the maintenance of the construction equipment would only be brought to the construction site by a maintenance technician on an as-needed basis, and any unused or waste substances would be removed during the same service call.

An Oregon Department of Environmental Quality (OEDQ)-approved Spill Prevention Control and Countermeasure Plan (SPCC Plan) (Condition PRE-SP-01) would apply during construction and will outline preventative measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release.

The prevention and minimization of accidental releases would be accomplished through proper containment during use and transportation to the site, and the observance of appropriate handling procedures during the transfer of any fuels from the delivery vehicles to the construction equipment as described in the SPCC Plan. As identified in the ASC, will take place a substantial distance from waterways or wetlands to prevent water quality impacts in the event of an accidental release.

In the unlikely event that an accidental spill occurs, any spilled or released substances would be cleaned up, and any contaminated media impacted by the spill would be managed in accordance with all applicable regulations as described in the SPCC Plan. Larger spill kits with absorbents, absorbent pads, spill socks, and disposable bags would be maintained, in close proximity to construction activities. In addition, to reduce the response time to a spill, smaller spill kits containing absorbent pads would be located on key pieces of construction equipment. All employees would be instructed in the location, handling, and usage of the spill kits. All spills would be reported to a designated qualified person who would make an assessment of the cleanup activities and a determination if further actions or notifications are required.

3.2 Operations

As identified in the ASC, during operation of the Facility, small quantities of a few hazardous materials may be utilized; such materials may include cleaners, insecticides or herbicides, paint, or solvents. The solar arrays would not require a significant increase in use of these items and none would be present in substantial reportable quantities; the amounts present (if any) would be no greater than household quantities of no more than a few gallons each. When not in use these would be stored in a secure location within the O&M Buildings.

Use of the battery storage system were addressed in RFA 2 and there is no change to their general operation and materials with the inclusion of distributed energy storage. The lithium-ion batteries may include hazardous materials. Lithium-ion batteries are considered non-hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained (not damaged and internal seal is intact). Lithium-ion batteries present a flammability hazard and require cooling systems to prevent overheating. The battery storage system will have integrated safety systems that monitor battery performance to detect malfunctions and implement response

measures (such as notifying operators, depowering the system, or deploying fire suppression devices). Batteries will be housed in leak-proof containers to prevent inadvertent releases of hazardous materials. O&M staff will conduct inspections of the battery cells for damage.

A lithium-ion system will require regular change out of batteries as they degrade over time. The lithium-ion batteries will be replenished at a rate depending on usage. For example, a battery that is cycled more often will degrade faster than one that is used less often. For this analysis, it is assumed that 11 battery racks per 1 MW will be replaced every 3 years over the life of the Facility (50 years). This assumption likely overestimates the number of batteries that will flow into and out of the Facility, because not all batteries will be replaced during each replenishment cycle (e.g., fewer batteries will need replacing early in the Facility life). A group of lithium-ion battery cells will comprise a "rack." At this replacement rate, approximately 27,500 battery racks will be used over operation term of the battery storage system.

As identified in RFA 2, for the replacement of batteries during operation, the Certificate Holder will follow the handling guidelines of 49 Code of Federal Regulations 173.185 – Department of Transportation Pipeline and Hazardous Material Administration related to the shipment of lithium-ion batteries. Licensed third party battery suppliers will be responsible for transporting batteries to and from the Facility in accordance with applicable regulations, as required through their licensure (Condition GEN-OE-04). Spent batteries will be disposed at a facility permitted to handle them in compliance with applicable Resource Conservation and Recovery Act and Toxic Substances Control Act regulations administered by the U.S. Environmental Protection Agency or ODEQ (Condition OPR-PS-03).

As identified in Condition PRO-SP-01, an operational SPCC Plan may be required. It will depend on the quantity of transformer oil maintained on site. In the unlikely event of an accidental hazardous materials release, any spill or release will be cleaned up and the contaminated soil or other materials disposed of and treated according to applicable regulations. Employees will be trained to be aware of the potential hazards of the contents of the module through the availability of Material Safety Data Sheets, and to handle such releases in accordance with applicable regulations. See Exhibit CC for a list of applicable regulations. Spill kits containing items such as absorbent pads will be located on equipment and in onsite temporary storage facilities to respond to accidental spills, if any were to occur. Employees handling hazardous materials will be instructed in the proper handling and storage of these materials, as well as where spill kits are located. The Certificate Holder will report spills or releases of hazardous materials during construction or operation to the Oregon Department of Energy.

Fire prevention and response training will be implemented (Condition GEN-PS-03) and the Facility site plan will be submitted to fire protection officials (Condition PRO-PS-02) to minimize the risk of fire and to respond appropriately to any fires that occur on the Facility site. An Emergency Management Plan will be prepared (Condition PRE-PS-05) and a Site Health and Safety Plan will be prepared (Condition PRE-PS-06). The plans will cover equipment located at the site, including the new solar array and battery storage. The Certificate Holder will meet annually with local fire

protection agency personnel to discuss emergency planning and will invite local fire protection agency personnel to observe any emergency drills.

4.0 Non-Hazardous Waste Management – OAR 345-021-0010(1)(g)(C)

OAR 345-021-0010(1)(g)(C) The applicant's plans to manage non-hazardous waste materials during construction and operation.

4.1 Construction

Solid waste materials such as excess construction materials or steel will be generated during construction, in addition to the materials identified in the Site Certificate. Measures for minimizing recycling and reusing waste generated during construction, and for disposing of waste concrete are identified in the Construction Waste Management Plan (Condition PRE-WM-01).

Excess construction materials similar to those generated by construction of the wind turbines will be generated from construction of the solar array and battery storage. These materials will include scrap steel, wood, concrete waste, and earth materials. The wastes will be managed according to the Construction Waste Management Plan (Condition PRE-WM-01). Condition PRE-WM-02 requires the investigation and confirmation that there will be no impact from concrete washout water. Condition CON-WM-01 requires consent from the party receiving the earth materials and confirmation of earth material disposal sites to ensure no impact to sensitive environmental resources. In addition, Condition GEN-GS-07 requires that upon completion, the Certificate Holder to remove all temporary structures not required for facility operation and dispose of all timber, brush, refuse and flammable or combustible material resulting from clearing of land and construction of the Facility.

Construction stormwater will be generated at the location of the solar array and battery storage construction sites. Such stormwater will be covered under the Facility's National Pollutant Discharge Elimination System 1200-C construction permit and its associated erosion and sediment control plan (Condition CON-SP-01).

4.2 Operations

Condition OPR-PS-03 requires the Site Certificate Holder to prepare an Operational Waste Management plan which will include handling procedures for lithium-ion batteries (addressed in Section 3.2 above). The same types of solid and liquid nonhazardous waste will be generated as a result of construction and operation of the solar facility components; the Certificate Holder will manage such wastes in accordance with the Operational Waste Management Plan (Condition OPR-PS-03). No additional sewage streams will be created. Administrative activities related to the solar array and battery storage system will be conducted at the O&M building, and will not require additional office wastes.

4.3 Conclusions

Based on the information presented in this exhibit, the Facility, as proposed, continues to comply with the requirements of OAR 345-021-0010(1)(g).

5.0 References

Wheatridge (Wheatridge Wind Energy, LLC). 2015. Wheatridge Wind Energy Facility Application for Site Certificate. Prepared by Tetra Tech, Inc. July 2015.

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Exhibit H

Geologic and Soil Stability

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
DOGAMI	Oregon Department of Geology and Mineral Industries
ESCP	Erosion and Sediment Control Plan
Facility	Wheatridge Wind Energy Facility
FEMA	Federal Emergency Management Agency
IBC	International Building Code
K	erosion factor
MMI	Modified Mercalli Intensity
MW	megawatt
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
OSSC	Oregon Structural Specialty Code
PGA	peak ground acceleration
RFA	Request for Amendment
USGS	U.S. Geological Survey

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1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment (RFA) 4 to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit H provides an analysis of geologic hazards and soil stability for the Facility as required to meet the current structural standard in Oregon Administrative Rule (OAR) 345-022-0020 and the submittal requirements in OAR 345-021-0010(1)(h) paragraphs (A) through (I).

As detailed in the following sections, although the proposed changes provide for a new source of energy for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for compliance with the respect to the structure standard OAR 345-022-0020 (ODOE 2017). Therefore, the Council may rely on its previous conclusion that the Facility complies with the Structural Standard OAR 345-022-0020.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

Site Certificate conditions applicable to geologic hazard and soil stability include (ODOE 2017):

- GEN-GS-08: Construct to prioritize human safety.
- GEN-GS-09: Notification of foundation changes.
- GEN-GS-10: Notification of other geological observations.
- GEN-SS-01: Compliance with building codes.
- PRE-SS-01: Geological investigation reporting.
- PRE-SS-02: Investigation of active faults.
- PRE-SS-03: Investigation of slope instability.
- PRE-SS-04: Investigation of loess soil.
- CON-SP-01: Erosion and Sediment Control Plan (ESCP).
- PRE-PS-05: Preparation of an Emergency Management Plan.
- CON-SP-02: Best management practices to be included in ESCP.

2.0 Analysis Area

The Analysis Area for structural standards is the Site Boundary. The Site Boundary consists of the Approved Site Boundary and the Amended Site Boundary, and is defined in detail in Exhibits B and C. However, conditions have not changed within the Approved Site Boundary and no modifications to approved facilities are proposed. Therefore, this exhibit focuses on new information related to the solar facility within the Amended Site Boundary (Figure H-1).

3.0 Geologic Report – OAR 345-021-0010(1)(h)(A)

> *OAR 345-021-0010(1)(h) Information from reasonably available sources regarding the geological and soil stability within the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0020, including:*
>
> > *OAR 345-021-0010(1)(h)(A) A geologic report meeting the Oregon State Board of Geologist Examiners geologic report guidelines. Current guidelines shall be determined based on consultation with the Oregon Department of Geology and Mineral Industries, as described in paragraph (B) of this subsection.*

OAR 345-021-0010(1)(h)(A) requires submission of a geological report meeting the Oregon State Board of Geologist Examiners geologic report guidelines. Condition PRE-SS-01 requires the Certificate Holder to submit a protocol to the Oregon Department of Geology and Mineral Industries (DOGAMI), for review, with the applicable codes, standards, and guidelines to be used, and proposed geotechnical work to be conducted for the site-specific geotechnical investigation report.

Once DOGAMI has conducted a review and comments on the protocol are incorporated, the site-specific geological and geotechnical investigation will be conducted and reported to DOGAMI and the Oregon Department of Energy (ODOE) (ODOE 2017).

3.1 Topographic Setting

The Amended Site Boundary is located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner. Morrow County spans from the Columbia River on its northern boundaries to the Blue Mountains on the south end. The topography in Morrow County varies from a gently rolling plain adjoining the Columbia River to broad plateaus and rounded ridges in the central part of the county, which merges with the more rugged terrain of a forested spur of the Blue Mountains in the southern part of the county (Morrow County 2017).

The Facility occupies slopes ranging from 0 to 40 percent, with an average slope of 20 percent (NRCS 2018). Elevations within the Amended Site Boundary range from 3,310 feet above mean sea level to 4,500 feet above mean sea level.

3.2 Geologic Setting

As indicated in the Application for Site Certificate (ASC), the geologic setting of the Facility generally consists of loess and weak sedimentary rock overlying basalt bedrock. In some valley locations, catastrophic flood deposits (gravel and cobble bars overlain by silt) have been deposited by ancient floods. The geologic descriptions below are summarized from a U.S. Geological Survey (USGS) geologic map prepared for the state of Oregon (Walker and MacLeod 1991), and from observations made during the site reconnaissance described in the ASC (Wheatridge 2015). The geologic units within the Amended Site Boundary are shown in Figure H-1.

3.2.1 Bedrock Geologic Units

Basalt flows mapped in the vicinity of the Facility include the Wanapum and Grande Ronde basalt formations. The Grande Ronde Basalt is exposed in the valley walls along Oregon Highway 74, Blackhorse Canyon, and Bell Canyon, as well as Service Buttes. The Grande Ronde Basalt formation is typically black, aphyric, and dense, with even grain size. As shown in Figure H-1, the Wanapum Basalt underlies the southern/western portion of the Amended Site Boundary, along Strawberry Lane and Strawberry East Road. This unit is described as fine- to coarse-grained basalt, with reversed magnetic polarity. The basalt varies from intact to weathered. Tuffaceous sedimentary rocks and tuff underlie the northern/eastern portion of the Amended Site Boundary, primarily along Bombing Range Road (Figure H-1). This unit is described as semi-consolidated to well-consolidated lacustrine tuffaceous sandstone, siltstone, mudstone, concretionary claystone, pumicite, diatomite, air-fall and water-deposited vitric ash, palagonitic tuff and tuff breccia, and fluvial sandstone and conglomerate. In the vicinity of the Facility, this formation consists of imbricated, basaltic cobble gravel, with interbedded tuffaceous sands and silts that are weakly

cemented in places. This formation is exposed primarily by in-road cuts and erosional gullies in the vicinity of the Facility (Figure H-1).

3.2.2 Unconsolidated Geologic Units

The Oregon Statewide Landslide Database (SLIDO 3.4; DOGAMI 2017a) indicates a fan in the northeast portion of the Amended Site Boundary (Figure H-1). These deposits are generally triangular shaped deposits of gravel, sand, and smaller sediments. Loess deposits mantle the flatter plateau and upland areas. Loess is composed of wind-deposited fine sand and silt, and it mantles much of the Columbia Plateau. The loess is typically 15 to 30 feet thick, but it can be less than 3 feet thick in upland areas (Wheatridge 2015).

4.0 Evidence of Consultation with DOGAMI – OAR 345-021-0010(1)(h)(B)

OAR 345-021-0010(1)(h)(B) A summary of consultation with the Oregon Department of Geology and Mineral Industries regarding the appropriate methodology and scope of the seismic hazards and geology and soil-related hazards assessments, and the appropriate site-specific geotechnical work that must be performed before submitting the application for the Department to determine that the application is complete.

Consultation with DOGAMI occurred during the preparation of the ASC (Wheatridge 2015). In addition, consultation with DOGAMI for RFA 4 was initiated on November 14, 2018 with Yumei Wang, ODOE, the Certificate Holder, and Tetra Tech (Wang, 2018, pers. comm.). The results of this consultation discussion are included in Attachment H-1.[2]

5.0 Site-Specific Geotechnical Investigation – OAR 345-021-0010(1)(h)(C)

OAR 345-021-0010(1)(h)(C) A description and schedule of site-specific geotechnical work that will be performed before construction for inclusion in the site certificate as conditions.

Tetra Tech completed a detailed literature review of the local and regional geology in the vicinity of the Amended Site Boundary. This included evaluating existing reports at adjacent sites, as well as reviewing other published literature and geologic mapping. The literature review included a detailed evaluation of seismic hazards at the Facility (see Section 7.0).

Consistent with Site Certificate Condition PRE-SS-01, before beginning construction, the Certificate Holder will conduct a site-specific geological and geotechnical investigation and shall report its

[2] Consultation with DOGAMI is ongoing.

findings to DOGAMI and ODOE. The report shall be used by the Certificate Holder in the final Facility layout and design. ODOE shall review the report in consultation with DOGAMI and confirm that it includes an adequate assessment of the requirements identified in Site Certificate Condition PRE-SS-01.

6.0 Transmission Lines and Pipelines – OAR 345-021-0010(1)(h)(D)

OAR 345-021-0010(1)(h)(D) For all transmission lines, and for all pipelines that would carry explosive, flammable or hazardous materials, a description of locations along the proposed route where the applicant proposes to perform site specific geotechnical work, including but not limited to railroad crossings, major road crossings, river crossings, dead ends (for transmission lines), corners (for transmission lines), and portions of the proposed route where geologic reconnaissance and other site specific studies provide evidence of existing landslides, marginally stable slopes or potentially liquefiable soils that could be made unstable by the planned construction or experience impacts during the facility's operation.

The Amended Site Boundary and solar generation facilities presented under RFA 4 will not include additional transmission lines but will rely on the use of related and supporting facilities, including common transmission infrastructure previously approved under the existing Site Certificate. The Facility does not include pipelines carrying hazardous substances as described in OAR 345-021-0010(1)(h)(E).

7.0 Seismic Hazard Assessment – OAR 345-021-0010(1)(h)(E)

OAR 345-021-0010(1)(h)(E) An assessment of seismic hazards, in accordance with standard-of-practice methods and best practices, that addresses all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries described in paragraph (B) of this subsection, and an explanation of how the applicant will design, engineer, construct, and operate the facility to avoid dangers to human safety and the environment from these seismic hazards. Furthermore, an explanation of how the applicant will design, engineer, construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters. The applicant shall include proposed design and engineering features, applicable construction codes, and any monitoring and emergency measures for seismic hazards, including tsunami safety measures if the site is located in the DOGAMI-defined tsunami evacuation zone.

7.1 Methods

The Council previously found that the Certificate Holder adequately characterized the Facility site as to the maximum credible earthquake and maximum probable ground motion, accounting for ground failure and amplification for the site-specific soil profile under the maximum credible and maximum probable seismic event (ODOE 2017). The updated Structural Standard (OAR 345-022-0020) was addressed for the wind facility and energy storage facilities in RFA 2 and RFA 3. This exhibit addresses the updated Structural Standard for the solar array and related or supporting facilities as requested by DOGAMI during the consultation call on November 14, 2018 (Attachment H-1).

Topographic and geologic conditions and hazards within the Amended Site Boundary were evaluated by reviewing available reference materials such as topographic and geologic maps, aerial photographs, existing geologic reports, and data provided by DOGAMI, the Oregon Water Resources Department, USGS, and the Natural Resources Conservation Service (NRCS).

Tetra Tech performed a seismic hazard analysis to characterize seismicity in the vicinity of the Facility, and to evaluate potential seismic impacts. This work was based on the potential for regional and local seismic activity as described in the existing scientific literature, and on subsurface soil and groundwater conditions within the Amended Site Boundary based on geotechnical subsurface investigations. The seismic hazard analysis consisted of the following tasks:

1. Detailed review of USGS, National Geophysical Data Center, and DOGAMI literature and databases.
2. Identification of potential seismic events for the site characterization of those events in terms of a series of design events.
3. Preparation of conclusions and recommendations based on the characteristics of the subsurface soils and design earthquakes, including specific seismic events that might have a significant effect on the site, potential for seismic energy amplification at the site, and the site-specific acceleration response spectrum for the site.
4. Evaluation of seismic hazards, including potential for fault rupture, earthquake-induced landslides, liquefaction and lateral spread, settlement, and subsidence.

7.2 Maximum Considered Earthquake Ground Motion under IBC 2015

The USGS Seismic Hazard Mapping Project (USGS 2018a) developed ground motions using a probabilistic seismic hazard analysis that covered the Facility site. Though these motions are not considered site-specific, they provide a reasonable estimate of the ground motions within the Amended Site Boundary. For new construction, the site should be designed for the maximum considered earthquake, according to the most recently updated International Building Code (IBC; IBC 2015) as supplemented by the Oregon Structural Specialty Code (OSSC; OSSC 2014). The USGS unified hazard tool analysis was re-run for the Amended Site Boundary and the design event has a 2

percent probability of exceedance in 50 years (or a 2,475-year return period). This event has a peak ground acceleration (PGA) of 0.1712 acceleration from gravity at the bedrock surface, at the western edge of the Amended Site Boundary. The values of PGA on rock are an average representation of the acceleration most likely to occur at the site for all seismic events (crustal, intraplate, or subduction; USGS 2018a).

Seismic design parameters were developed in accordance with the IBC 2015. Using the subsurface information currently available, the Facility would be designed for Site Class C, according to IBC requirements (Table H-1).

Table H-1. Seismic Design Parameters – Maximum Considered Earthquake

Site Class	Peak Horizontal Ground Acceleration on Bedrock	Soil Amplification Factor, F_a	Peak Horizontal Ground Acceleration at Ground Surface
S_C	0.1712g	1.2	0.205g
g = acceleration from gravity.			

The following additional parameters for the Maximum Considered Earthquake may be used for structural design:

- Short period (0.2-second) spectral response acceleration, S_{MS} = 0.465g for Site Class S_C
- 1-second period spectral response acceleration, S_{M1} = 0.252g for Site Class S_C

The design spectral response acceleration parameters, S_{DS} and S_{D1}, for both short period and 1-second period are determined by multiplying the Maximum Considered Earthquake spectral response accelerations (S_{MS} and S_{M1}) by a factor of 2/3.

7.2.1 Earthquake Sources

As identified in the ASC, seismicity in northern Oregon is generated from the convergence of the Juan de Fuca plate and the North American plate at the Cascadia Subduction Zone (Wheatridge 2015). These plates converge at a rate between 1 and 2 inches per year and accumulate large amounts of stress that are released abruptly in earthquake events. The four sources of earthquakes and seismic activity in this region are crustal, intraplate, volcanic, and the Cascadia Subduction Zone (DOGAMI 2010).

Regionally, seismicity has been attributed to crustal deformation resulting from the Cascadia Subduction Zone and volcanism. Faults are considered active if there has been displacement in the last 10,000 years, and potentially active if there has been movement over the Quaternary period (last 1.6 million years). Overall, earthquakes in Oregon are associated with active faults in four regional zones of seismicity: the Cascade Seismic Zone, Portland Hills (Portland, Oregon-Vancouver, Washington metropolitan area) Zone, South-Central (Klamath Falls) Zone, and Northeastern Oregon Zone (Niewendorp and Neuhaus 2003). There are no known or active faults mapped within the Amended Site Boundary or Approved Site Boundary (USGS 2018b), as indicated on Figure H-2.

Site Certificate Condition PRE-SS-02 requires the Certificate Holder to include an investigation of all potentially active faults within the Site Boundary as part of the geotechnical investigation. The investigation will include a description of the potentially active faults, their potential risk to the facility, and any additional mitigation that will be undertaken by the certificate holder to ensure safe design, construction, and operation of the facility.

Probabilistic seismic hazard deaggregation at 475-year intervals are shown in Attachment H-2, and at 2,475-year intervals in Attachment H-3.

7.2.2 Recorded Earthquakes

Recorded earthquake data do not differ from what was reported in the ASC and are restated below for ease of reference. Figure H-2 displays the location and approximate magnitude of all recorded earthquakes within approximately 50 miles of the Site Boundary. The historical seismic events are grouped by magnitude and are displayed with differently-sized symbols based on the strength of event.

Table H-2 provides a summary of recorded earthquakes greater than a magnitude 3.0 and within 50 miles of the Amended Site Boundary that are known to have caused Modified Mercalli Intensity (MMI) III or greater shaking intensity (Wheatridge 2015). For reference, an intensity of MMI III is associated with shaking that is "noticeable indoors but may not be recognized as an earthquake." (USGS 2018a).

Table H-2. Significant Historical Earthquakes within 50 Miles of the Facility

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Estimated MMI Intensity
1893	3	7	45.90	-119.40	--	VII
1922	10	16	45.83	-119.23	--	III
1922	12	12	45.67	-118.75	--	III
1955	8	21	44.5	-120.0	3.0	--
1958	5	7	45.1	-122.0	3.4	--
1959	11	24	46.55	-121.47	3.1	--
1962	11	9	46.13	-121.63	3.2	--
1963	1	17	44.95	-120.8	3.0	--
1963	4	6	44.43	-119.63	3.3	--
1965	8	19	44.6	-118.4	4.4	--
1965	11	7	44.9	-117.0	4.3	--
1967	8	5	44.9	-118.0	3.5	--
1969	4	19	45.78	-119.7	3.2	--
1969	9	27	46.63	-118.08	3.1	--
1969	11	1	46.85	-120.45	3.2	--
1969	11	21	46.62	-118.88	3.6	--

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Estimated MMI Intensity
1970	1	1	46.27	-118.35	3.0	--
1970	4	4	46.3	-119.9	3.0	--
1970	4	22	46.3	-120.13	3.0	--
1970	6	22	46.47	-120.02	3.1	--
1970	9	11	46.63	-120.42	3.5	--
1970	10	2	45.77	-120.56	3.0	--
1970	11	22	46.82	-120.33	3.0	--
1970	11	29	46.2	-120.1	3.0	--
1951	1	7	45.92	-119.23	--	V
1969	4	19	45.78	-119.70	3.2	--
1971	1	4	46.22	-119.35	3.1	--
1975	7	1	45.63	-120.00	3.5	--
1985	2	10	45.86	-119.64	3.7	--
1987	9	8	45.18	-120.09	3.1	--
1987	9	29	45.19	-120.11	2.7	--
1988	7	11	45.25	-120.13	2.9	--
1988	9	29	45.85	-120.26	3.5	--
1989	3	27	45.82	-120.26	3.1	--
1991	4	20	45.35	-120.14	2.8	--
1992	8	7	45.86	-119.59	3.9	--
1993	12	16	45.20	-120.09	3.0	--
1993	12	18	45.25	-120.11	3.1	--
1994	9	22	45.69	-120.16	2.9	--
1994	11	17	45.70	-120.18	2.7	--
1995	11	2	46.15	-119.56	3.1	--
1996	2	13	45.53	-119.61	2.9	--
1997	3	22	45.20	-120.07	2.7	--
1997	3	22	45.19	-120.07	3.9	--
1997	3	23	45.20	-120.07	3.4	--
1997	4	17	45.19	-120.08	3.2	--
1997	8	17	45.65	-120.19	2.8	--
1997	9	10	45.65	-120.20	2.7	--
1998	2	3	45.81	-120.2	3.1	--
1998	4	28	45.26	-120.28	2.7	--
1998	8	12	45.17	-120.03	2.8	--
1998	9	5	45.65	-120.49	2.9	--

Year	Month	Day	Latitude	Longitude	Moment Magnitude	Estimated MMI Intensity
1999	8	31	45.19	-120.09	3.2	--
1999	9	4	45.18	-120.08	2.9	--
2000	1	5	45.70	-120.05	2.8	--
2000	1	30	45.20	-120.13	4.1	--
2000	1	30	45.19	-120.10	3.4	--
2000	1	30	45.18	-120.11	2.8	--
2000	2	1	45.19	-120.11	3.6	--
2000	2	1	45.19	-120.12	2.8	--
2000	7	25	45.34	-121.68	2.8	--
2000	7	28	45.17	-120.14	2.6	--
2000	8	3	45.21	-120.07	2.8	--
2000	8	17	45.31	-120.04	3.2	--
2002	1	31	45.69	-120.17	2.7	--
2002	10	25	45.19	-120.10	2.7	--
2003	6	1	45.19	-120.11	2.8	--
2003	9	12	45.43	-118.86	2.8	--
2004	2	28	46.04	-119.02	3.6	--
2008	5	18	46.16	-119.55	3.7	--
2009	8	16	45.93	-120.10	2.8	--
Sources: Madin 1994, USGS 2018b.						

The Ground Response Spectra Assessment on Attachments H-4 and H-5 compare the design response spectrum given in the 2012/2015 IBC with the 2014 OSSC (USGS 2018a). Response spectra are provided for the maximum considered earthquake at the location of the Facility. For the maximum considered earthquake, separate response spectra modified by the amplification factors for Site Class C (S_C) are provided. Based on the current subsurface information available, it is recommended that the Facility be designed for Site Class C. However, examination of the geology mapped for the site suggests that shallow bedrock formations (Wanapum Basalt) may exist at certain locations, where the S_B response spectra would apply.

7.2.3 Hazards Resulting from Seismic Events

Potential seismic hazards associated with a design seismic event for this Facility include seismic shaking or ground motion, fault displacement, instability from landslides or subsurface movement, and adverse effects from groundwater or surface water. These hazard risks are anticipated to be low, as discussed below.

7.2.3.1 Seismic Shaking or Ground Motion

The design seismic event will have a 2,475-year recurrence interval. The structures will be designed for this unlikely event so that no permanent structural damage will occur. The Facility's structures will be designed to withstand the maximum risk-based design earthquake ground motions developed for the Facility site. The State of Oregon has adopted the IBC 2012 code for structural design. Specifically, this is Section 1613 (Earthquake Loads) of the 2014 OSSC, which is in Chapter 16. It should be noted that building codes are frequently updated; the IBC specifically is updated every 3 years. Consistent with Condition GEN-SS-01, the Certificate Holder will design, engineer, and construct the Facility in accordance with the current version of the latest International Building Code, Oregon Structural Specialty Code, and building codes adopted by the State of Oregon at the time of construction. Therefore, it is incumbent on the design engineers to ensure that the designs are in accordance with the current versions of the latest codes as adopted by the State of Oregon at the time of construction.

Based on geotechnical and geological information, a Site Class for the soil/bedrock at the site is assigned. In this case, as described previously in Section 7.2.1, a Site Class C (very dense soil to soft rock) is appropriate for the Facility.

As identified in the ASC, based on site-specific analyses, the original equipment manufacturer will provide the structural engineer with site specific foundation loads and requirements. The structural engineer then completes the foundation analyses based on the design site-specific parameters. Generally, these include the following loads for solar foundation design: extreme loads, load cases for up-lift, shear failure, tension loads (for pile foundations), earthquake loads, fatigue loads, subsoil properties, spring constants, verification procedures, and maximum allowable inclination.

The geotechnical studies and analyses provide site-specific parameters including but not necessarily limited to: moisture content and density, soil/bedrock bearing capacity, bedrock depth, settlement characteristics, structural backfill characteristics, soil improvement (if required), and dynamic soil/bedrock properties including shear modulus and Poisson's Ratio of the subgrade. The foundation design engineer uses these parameters to design a foundation suitable for the Facility and verifies that the foundation/soil interaction meets or exceeds the minimum requirements stated by the original equipment manufacturer for the Facility.

7.2.3.2 Fault Rupture

The probability of a fault displacement within the Amended Site Boundary is considered low because of the distance (> 25 miles away) of known or mapped potentially active faults from Amended Site Boundary and the absence of faults within the Amended Site Boundary (Figure H-2). Unknown faults could exist, or new fault ruptures could form during a significant seismic event, but the likelihood of either occurrence is low based on the lack of active faults identified during previous geologic investigations.

7.2.3.3 Liquefaction

Liquefaction is a phenomenon in which saturated, cohesionless soils temporarily lose their strength and liquefy when subjected to dynamic forces such as intense and prolonged ground shaking and seismic activity. The soils in the Amended Site Boundary are not saturated and are generally cohesive in nature. Along with the relatively low seismic event potential, this indicates that the liquefaction of soils within the Amended Site Boundary is considered extremely unlikely.

7.2.3.4 Seismically Induced Landslides

Seismicity in the region has the potential to trigger landslides and mass wasting processes within the Amended Site Boundary; however, the potential is considered low and limited to the steepest canyon areas. Known landslides are shown in Figure H-1. More detailed discussion on the location and type of landslides is included in Section 8.1.

7.2.3.5 Subsidence

Subsidence is the sudden sinking or the gradual downward settling of the land surface, and is often related to groundwater drawdown, compaction, tectonic movements, mining, or explosive activity. Subsidence due to seismic event is highly unlikely. In most areas bedrock is relatively shallow, and as noted above, the overlying soils are not saturated.

7.2.4 Seismic Hazard Mitigation

The State of Oregon uses IBC 2012, with current amendments by the OSSC (OSSC 2014). Pertinent design codes as they relate to geology, seismicity, and near-surface soils are contained in IBC Chapter 16, Section 1613, with slight modifications by the current amendments of the State of Oregon. Prior to submitting any building permit applications, as identified above in Section 7.2.3, the Facility will be designed to meet or exceed the minimum standards required by current design codes (Condition GEN-SS-01).

A final geotechnical exploration will be conducted to collect pertinent data for the design of the Facility, to mitigate potential hazards that could be created during a seismic event. The hazard of a surficial rupture along a fault trace is anticipated to be low, given the seismic history of the site displayed in geologic mapping, and the low probability that a fault rupture would displace the ground surface at the location of the solar facility. No mitigation for potential fault rupture is anticipated; the risk to human safety and the environment will be minimal. Design parameters related to disaster resilience are further described in Section 9.0.

8.0 Non-Seismic Geological Hazards – OAR 345-021-0010(1)(h)(F)

OAR 345-021-0010(1)(h)(G) An assessment of geology and soil-related hazards which could, in the absence of a seismic event, adversely affect or be aggravated by the construction or operation of the facility, in accordance with standard-of-practice methods and best practices, that address all issues relating to the consultation with the Oregon Department of Geology and Mineral Industries described in paragraph (B) of this subsection. An explanation of how the applicant will design, engineer, construct and operate the facility to adequately avoid dangers to human safety and the environment presented by these hazards, as well as:

(i) An explanation of how the applicant will design, engineer, construct and operate the facility to integrate disaster resilience design to ensure recovery of operations after major disasters.

(ii) An assessment of future climate conditions for the expected life span of the proposed facility and the potential impacts of those conditions on the proposed facility.

8.1 Landslides

No active landslides are identified in the Statewide Landslide Information Database for Oregon within the Amended Site Boundary (Figure H-1). However, a few small landslides are shown close to the southern portion of Wheatridge West (Wheatridge 2015). These landslides were observed during the site reconnaissance, and may be areas of slope instability (Figure H-1). Per Site Certificate Condition PRE-SS-03, prior to construction, the Certificate Holder will include, as part of the geotechnical investigation, an investigation of specific areas with potential for slope instability and will site facilities as appropriate to avoid potential hazards. The landslide hazards will be investigated and mapped before final facility layout and design. The landslide hazard evaluation will be conducted using a combination of LIDAR (light detection and ranging) remote sensing data and field work.

8.2 Volcanic Activity

Volcanic activity in the Cascade Range is driven by the subduction of the Juan de Fuca Plate beneath the North American Plate. The closest volcanoes to the Amended Site Boundary are Mount Hood and Mount Adams, each located approximately 100 miles away. Most of the potential volcanic hazard impacts would occur within a 50-mile radius of the erupting volcano. Depending on the prevailing wind direction at the time of the eruption and the source of the eruption, ash fallout in the region surrounding the Facility may occur. Because of the distance to the nearest volcanoes, impacts to the Facility from volcanic activity would be indirect and likely be limited to ash fallout. In addition, the Facility is not located near any streams that would likely be subject to pyroclastic flows from a volcanic eruption from these close volcanoes. It is unlikely that there would be any adverse effects from volcanic activity on the construction or operation of the Facility.

8.3 Erosion

The erosion factor (K) indicates the susceptibility of a soil to sheet and rill erosion by water. The K-Factor is one of six factors used in the Universal Soil Loss Equation and the Revised Universal Soil Loss Equation to predict the average annual rate of soil loss by sheet and rill erosion in tons-per-acre-per-year. The estimates are based primarily on percentage of silt, sand, and organic matter, as well as soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. Data from the NRCS Web Soil Survey (NRCS 2018) indicate that the soils within the Amended Site Boundary have a K that ranges from 0.15 to 0.55. For the range of K at the Facility, the soils could be considered moderately to highly erodible, and subject to sheet erosion and rill erosion by water (NRCS 2018).

8.4 Flooding

To evaluate flood hazards, the DOGAMI Statewide Flood Hazard Database for Oregon – Federal Emergency Management Agency (FEMA) Flood Insurance Study inundation zones (DOGAMI 2017b) were compared to the Amended Site Boundary. The Amended Site Boundary is not within an identified FEMA 100-year or FEMA 500-year floodplain.

Seasonal thunderstorms can result in concentrated stormwater runoff and localized flooding. The engineered access roads and drainages will direct stormwater runoff away from structures and into drainage ditches and culverts as required in the ESCP (Condition CON-SP-01). The Facility will be designed and engineered to meet the requirements of the zoning ordinances and building codes that establish flood protection standards for all construction, to avoid dangers to the infrastructure, as well as human safety and the environment, including criteria to ensure that the foundation will withstand flood forces. Therefore, the risks and potential impacts to the Facility as well as human safety and the environment from flood hazards are expected to be low.

8.5 Shrinking and Swelling Soils

Changes in soil moisture cause certain clay minerals in soils to either expand or contract. The amount and type of clay minerals in the soil influence the change in volume. Structures or roads built on shrinking or swelling soils could be damaged by the change in volume of the soil. Linear extensibility (shrink-swell potential) refers to the change in length of an unconfined clod as its moisture content is decreased from a moist state to a dry state.

There are no soils identified in the Amended Site Boundary with potential for shrinking and swell (see Exhibit I). Regardless, per Site Certification Condition PRE-SS-04, prior to construction, the Certificate Holder will include, as part of the geotechnical investigation, an investigation of the swell and collapse potential of loess soil in the site boundary. Based on the results of the investigation, the Certificate Holder will include mitigation measures including, as necessary: over-excavating and replacing loess soil with structural fill; wetting and compacting; deep foundations; or avoidance of specific areas.

9.0 Disaster Resilience

The State of Oregon uses IBC 2012, with current amendments by the OSSC and local agencies. Pertinent design codes as they relate to geology, seismicity, and near-surface soils are contained in IBC Chapter 16, Section 1613, with slight modifications by the current amendments of the State of Oregon and local agencies. The Facility will be designed to meet or exceed the minimum standards required by these design codes. The Certificate Holder acknowledges that DOGAMI encourages, but does not require, applicants to design and build for disaster resilience and future climate conditions using science, data and community wisdom to protect against and adapt to risks (DOGAMI 2018). With this in mind, the Certificate Holder has extensive experience building energy facilities and, as indicated in RFA 3, from a structural perspective, designs projects to withstand non-seismic geologic hazards such as the potential for changes in rainfall or temperature. Additional elements such as wind speeds, snow, dust, etc. are also considered into project designs depending on the location in the country. For example, existing solar facilities in Florida have been designed by the Certificate Holder to withstand hurricane force winds.

A qualified engineer will assess and review the seismic, geologic, and soil hazards associated with the construction of the Facility. Construction requirements will be modified, as needed, based on the site-specific characterization of seismic, geologic, and soil hazards. The Facility will be designed, engineered, and constructed to adequately avoid potential dangers to human safety presented by seismic hazards. Substation structures will be designed in accordance with the OSSC. Facility structures will be generally unmanned, and located in a sparsely populated area; therefore, the risks to human safety and the environment due to seismic hazards will be minimal. While it is difficult to predict what disasters will occur in the future, the Facility will be designed, engineered, and constructed to meet all current standards.

Condition PRE-PS-05 requires submittal of the Emergency Management Plan to ODOE prior to construction. Preparation of this plan is not required for evaluation of compliance with standards, but in accordance with Site Certificate Condition PRE-PS-05, ODOE must approve the plan prior to construction. An example of an Emergency Action Plan prepared for a New York energy storage center owned and operated by the certificate holder is provided as Attachment H-6.

10.0 Climate Change

The University of Washington conducted a study to assess climate vulnerability and adaptation in the Columbia River Plateau, the region where the Facility is located (Michalak et. al. 2014). The study involved downscaling five climate models (CCM3, CGM3.1, GISS-ER, MIROC3.2 and Hadley). Climate projections were downscaled to approximately a 1-kilometer resolution for over 40 different direct (mean annual temperature/precipitation) and derived (number of growing-degree days, actual and potential evapotranspiration) climate variables (Michalak et. al. 2014). The downscaling of the climate models for this area led to future projections of greater annual average

and summer temperatures, and more severe storm events and wildfires, among other changes. These specific changes are expected to increase stress to power lines in the region.

Reinforcing the Certificate Holder's electric grid with the Facility as modified under RFA 4 provides resilience to the overall energy grid in this part of Oregon. This will be direct, by upgrading the system, which is anticipated to experience higher loads under raising temperatures and the related increases in power demand for summer cooling, and indirect, by supporting the delivery of power generated through a larger variety of sources, minimizing the potential reduction in hydro power's role under future conditions. Both aspects of this Facility support resiliency in the face of future climate change. In addition, the Facility will be designed to withstand extreme events as explained above in Section 9.0.

11.0 Conclusions

The human safety risk of seismic and other geologic and soil-based hazards to low. The Facility is located in a sparsely populated region of Oregon where land management and site conditions are expected to prevent residential or industrial development during the life of the Facility. In addition, only a few maintenance personnel would be on site at any given time. As a result, the probability of a large seismic, volcanic, or mass wasting event occurring while a Facility component is occupied would be much lower than a building or similar facility in a more populated area of similar seismic activity.

Non-seismic hazards that could affect the Facility include volcanic hazards, floods, landslides, and erosion. Volcanic hazards are expected to be low for the Facility. Landslides have been identified near the Amended Site Boundary; these areas will undergo additional geotechnical investigations to ensure that no Facility components are located on or near unstable land masses.

Land disturbance and construction impacts could increase the area's susceptibility to soil erosion. Best management practices will be implemented through the National Pollutant Discharge Elimination System 1200-C Stormwater Construction Permit and associated ESCP to mitigate the potential for erosion (Condition CON-SP-01).

Site Certificate structural standard conditions require the Certificate Holder to design, engineer, and construct the facility in accordance with the current versions of the latest International Building Code, Oregon Structural Specialty Code, and building codes as adopted by the State of Oregon at the time of construction (Condition GEN-SS-01). In addition, DOGAMI requests that the facility be constructed above code where conditions warrant, specifically as it relates to disaster resilience and future extreme climate events.

The Certificate Holder has demonstrated in accordance with OAR 345-022-0020(1)(b) that the Facility can be designed, engineered, and constructed to avoid dangers to human safety in case of a design seismic event by adhering to IBC requirements.

12.0 References

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Figures

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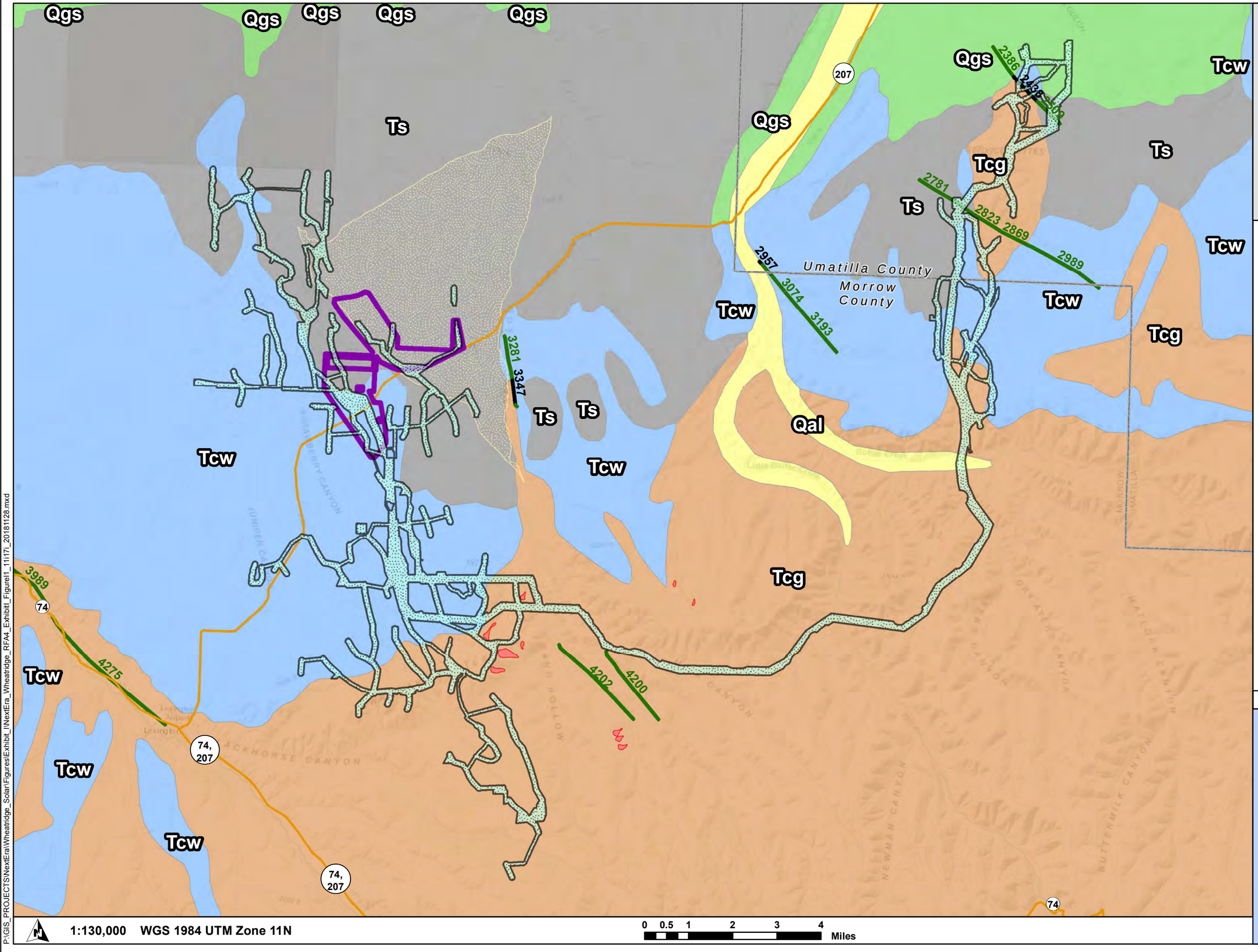
Wheatridge Wind Energy Facility Request for Amendment 4

Figure H-1 Geologic Map

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Boundary
- Fan
- Landslide

Fault Line

- Yes
- No

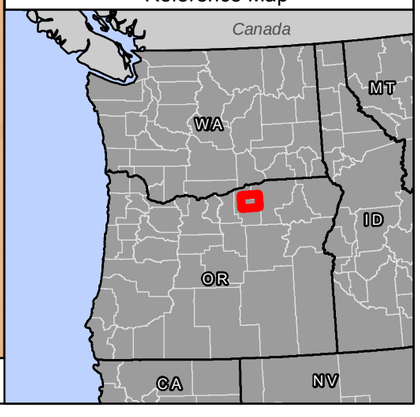
Surface Geology

- Qal - Alluvial Deposits
- Qgs - Glaciofluvial, Lacustrine, and Pediment Sedimentary Deposits (Pleistocene)
- Tcg - Grande Ronde Basalt (Middle and Lower Miocene)
- Tcw - Wanapum Basalt (Middle Miocene)
- Ts - Tuffaceous Sedimentary Rocks and Tuff (Pliocene and Miocene)

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:130,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure H-2 Historical Seismicity and Potentially Active Faults

MORROW AND UMATILLA COUNTIES, OR

Washington
Oregon
Yakima County
Franklin County
Benton County
Klickitat County
Sherman County
Gilliam County
Morrow County
Wasco County
Jefferson County
Wheeler County
Grant County
Umatilla County
Union County
Baker County
Wallowa County
Walla Walla County
Columbia County
Garfield County

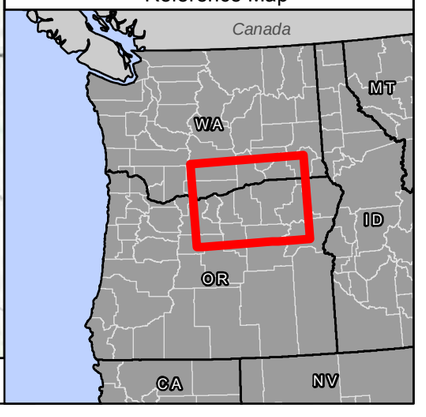
Approved Site Boundary (Approved Wind Micrositing Corridors)
Amended Site Boundary (Proposed Solar Micrositing Corridors)
Analysis Area (50-mile Buffer)
State Boundary
County Boundary

Faults
Age
Mid to Late Quaternary
Quaternary

Earthquakes
Magnitude
2.5 - 3.0
3.1 - 4.0
4.1 - 5.0

TETRA TECH
NEXTera ENERGY RESOURCES

Reference Map



1:820,000 WGS 1984 UTM Zone 11N

0 5 10 20 30 40 Miles

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Attachment H-1. Draft Record of Correspondence with DOGAMI

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DRAFT Wheatridge Solar Project Consultation with Oregon Department of Geology and Mineral Industries (DOGAMI)

November 14, 2018
Skype Call and Meeting in Portland, OR at the DOGAMI office

In Attendance	Yumei Wang, P.E. – DOGAMI
On Phone	Mike Pappalardo – NextEra Energy; Carrie Konkol – Tetra Tech/NextEra Energy; Suzy Cavanagh – Tetra Tech/Pattern Energy; Sarah Esterson - ODOE

DOGAMI requested that the consultation meeting held on November 14, 2018 be summarized and emailed to DOGAMI and ODOE for review so that we are all on the same page as to what is expected to be analyzed.

Project Background, RFA description

The Wheatridge Wind Energy Facility (Facility) is an approved wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts, to be located on approximately 13,097 acres. The final order on the site certificate was in April 2017; the wind facility has no yet been build.

Two requests for amendment (RFA) have been submitted; RFA 2 requests approval for construction and operation of two battery storage systems, to be rated at 20 and 30 megawatts, to be located adjacent to previously approved Facility substation and operation and maintenance building sites, with previously approved site boundary. RFA 3 requests approval for flexibility in wind turbine technologies selected during final Facility design, including changes in wind turbine dimensions that would increase blade tip height, increase blade length from, increase hub height, increase rotor diameter, and reduce minimum aboveground blade tip clearance.

Both of those amendments are still in the EFSC process and we expect issuance at end of this year or early next year. We are working on RFA 4 to add solar to already permitted wind at Wheatridge. Two figures that were emailed to show the permitted wind project and the proposed amended site boundary for the solar array were explained. NextEra Energy Resources (NEER) is proposing to add 150 MW of solar, about 70 racked modules mounted approximately 5 feet off the ground that rotate about 60 degrees to the east and west. The solar array will not be sited completely within the purple area, but a subset of that area. Looking for flexibility based on additional constraints that are determined over time. We are calling these two areas solar array 1 (northern area) and solar array 2 (southern area). They will be connected with two alternative line collector routes (34-kv collector

cables) either underground or overhead. The solar array will share the substation, roads, and O&M building that were previously approved. There will be energy storage; however, it is different than the battery storage requested in RFA2. Under RFA 4, it will be distributed energy storage, which will be 41 sites of lithium ion batteries in small concrete containers throughout the solar array areas.

To recap, there is a site certificate from 2017, but NEER is seeking RFAs for 2, 3, and 4 but haven't submitted for 4 yet. The schedule for RFA 4 is scheduled to be submitted at the end of November 2018.

ODOE stated that for RFA 2 and 3 and the scope of those changes, under the new rules, ODOE relied on the evaluation and consultation that occurred under the ASC. This call is to inform DOGAMI of the proposed changes that are outside of the current Site Boundary.

Information needed for the RFA

- Since 2014 – there have been changes to the structural standards.
- Exhibit H and I from the site certificate were emailed out and are the latest description of soils and geology. DOGAMI only needs the geology and is concerned about the seismic design parameters.
- Mass wasting is unlikely as the site is mostly glacial loess. DOGAMI stated that some owners would scrape away the loess, so they don't have to deal with it. NEER will have geologic engineers conduct studies. NEER has not yet selected the geologic engineers, but Barr Engineering has done work for NEER in the past. The construction timeline is a way out, so the engineering firm hasn't been selected.
- DOGAMI will want to know that Barr Engineering, or the or geotechnical engineers will use the report guidelines by the Oregon State Board of Geology Examiners to ensure the hazards are addressed using state of practice methods. Any codes that will be used need to be clearly stated and up to date. Oregon currently has a new building code and it is likely next year that the state of Oregon will adopt the new building code. DOGAMI asks to keep in mind that when this project goes forward, there might be a different building code in place. For the site specific geotechnical work, DOGAMI wants to be sure there are no active faults that are nearby or through the property, this should be addressed in the design. Site specific response spectra need to be conducted. The project area is pretty far away from the Cascadia subduction zone but look at any tall structures that could be affected in the long-period by the Cascadia, this needs to be analyzed and addressed for safety purposes.
- The design response spectra were developed for the wind farm in 2012. Does it need to be revised for the solar array? DOGAMI stated that if it was done in the 2012 timeframe, then it should be updated. There have been several large earthquakes worldwide, which need to be considered. Those were not likely considered in the 2012 Exhibit H because the earthquake data are slow to come out.

- On another project, the repower for Vancycle II, we cited structural standards and current information was used to inform design. NEER will ensure that the most current state codes along with the IBC are used.
- The current 2014 code refers to 2012 IBC and ASCE7-7. Next year, the State of Oregon is expected to adopt the 2019 Oregon Structural Specialty Code, which will refer to different ASCE7. Refer to the code and year you are using.
- Building permit applications are while out; the project still needs to be put out to bid and award. But at the same time, we have to have minimum site design requirements to get the site certificate reviewed and approved; then it will go through the county specific permits.
- DOGAMI suggested to have the engineers run both; run current and what is likely to be adopted next year. Regardless of what code is current, DOGAMI wants to be sure the site specific geotechnical analysis includes quaternary active faults (not just USGS database), map and table of major faults, maximum considered earthquake, site-specific response spectra. address landslide hazards. DOGAMI expects with landslide hazards where the area is densely tree covered, Lidar will be used. DOGAMI expects due diligence with respect to public safety. NEER will have aerial photography with 1-ft contours or less. DOGAMI reiterated that Lidar is standard of practice and it might be available on the DOGAMI website for this area, especially where there are active faults and dense tree coverage. Section 3.1.4 of Exhibit H will be updated; significant earthquake history does not need to be updated. DOGAMI needs site-specific work is done to estimate the ground motion, long duration energy in design spectrum.
- This project will not be in construction until spring 2020, so that will give the engineers time to catch up with updates in the code so that when the applications are finalized, they will be consistent with 2019. RFA 4 for solar will be consistent for 2019 and beyond, which will catch anything that may not be adequately described in the site certificate.
- For disaster resilience and future climate change discussion for the solar facility, NEER suggested that we look at the language used in the response provided to DOGAMI's RFIs on the Vansycle II height change amendment. This was the first time NEER encountered the new requirement for additional disaster resilience discussion and NEER thought that the Vansycle II response could provide some guidance.
- DOGAMI wants to know if anything is being designed above code. For example, it will lesson damage with extreme loading. If you can recover your operations quickly, then we need to know. Include a new paragraph in Exhibit H addressing how you will design to integrate disaster resilience to ensure recovery after a disaster. For example, installing emergency generators, study excess wind loading, ice loading, etc. Yumei emailed the DOGAMI Scope of Review for EFSC, which has examples of how this information can be included.
- As the project moves forward, let DOGAMI know what work has been done and what is planned in the future, including geotechnical borings, final design, etc.

- NEER will conduct a detailed geotechnical investigation with drilling on each wind turbine pad and at the solar facility, which is adjacent. Collapsible loess will be studied under the geotechnical investigation as well.
- With this RFA 4 for solar, some sections will be incomplete. NEER is trying to submit for commercial reasons to be responsive to PGE on their request for proposal (RFP) for the wind, solar and battery. PGE requested a solar application be submitted and there is a timeline for the application.
- There are site certificate conditions associated with the permit. DOGAMI asked for detail on what kind of investigations will take place, not just that investigations will be done, DOGAMI wants to know details of what will be done. That information will be included. DOGAMI requested that if information is going to be incomplete, just state that it is incomplete and how it will be addressed to be completed. Some applicants just state that they will do the geotechnical work. DOGAMI wants to know what kind of work; for example, site specific geotechnical, spectral response study, Lidar (or if not, Lidar what will be done instead). DOGAMI wants due diligence with respect to public safety.
- NEER we will understand the data gaps before submittal and will explain what and when those data gaps will be covered.
- DOGAMI would like notes as evidence of consultation with DOGAMI, they can also be provided to PGE.
- NEER's portfolio includes over 140 energy facilities across the US and is very busy (109 wind projects and 46 (30 utility and 16 private generation) solar projects). NEER's sister company is Florida Power and Light and together we do about $2-3 billion a year in infrastructure. NEER has a lot of resources and can't turn things around on a dime, but we do our best.
- ODOE stated that it depends on extent of completeness; ODOE will take a couple of months generally to review the RFA. If information is not available during that time, it can be appropriate to condition. This works for some projects and not for others.
- NEER will put together a schedule so you know what is coming and will expect requests for additional information.
- ODOE stated that if you are planning on putting together a geologic report meeting most of the requirements, the site specific geotechnical analysis can be conditioned. I am not too concerned that you will be submitting a skeleton of Exhibit H. NEER is aware of code changes and it will be included into Exhibit H. DOGAMI would much more likely ding you for not taking an incoming code in consideration than to be out of date on a code that is no longer being used.
- DOGAMI asked for an explanation of the difference in RFA 2 is for batteries and RFA 4 battery storage. Mike explained AC coupled versus DC coupled: AC energy would be taken

from the solar panels and would be interjected directly into the grid. Any energy not interjected would be put into the battery storage in RFA 2. Without battery storage there would be losses, the DC coupled is individual batteries and inverters at the controller panels themselves;, because of the DC battery system, less energy would be lost and the stored energy is released as energy is demanded If the losses over the gen-tie line, or if the losses of energy are not that significant, the price differential may not justify the DC system. We are coupling the AC with the wind project and requesting amendments duet the need for flexibility because technology is changing so rapidly.

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Attachment H-2.
Probabilistic Seismic Hazard Deaggregation – 475-Year Return Time

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Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition
Dynamic: Conterminous U.S. 201

Spectral Period
Peak ground acceleration

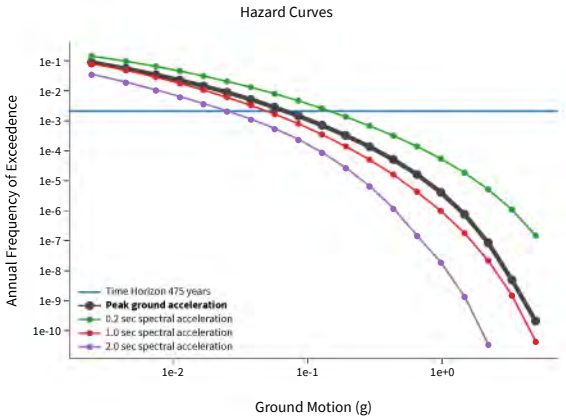
Latitude
Decimal degrees
45.585514

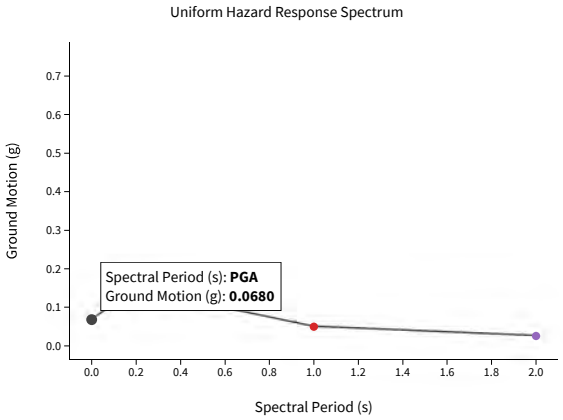
Time Horizon
Return period in years
475

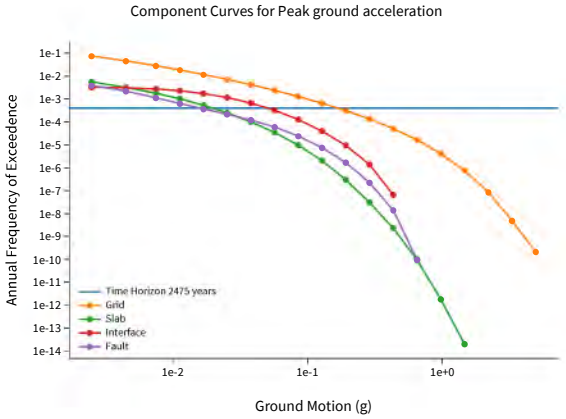
Longitude
Decimal degrees, negative values for western lo…
-119.598669

Site Class
760 m/s (B/C boundary)

Hazard Curve





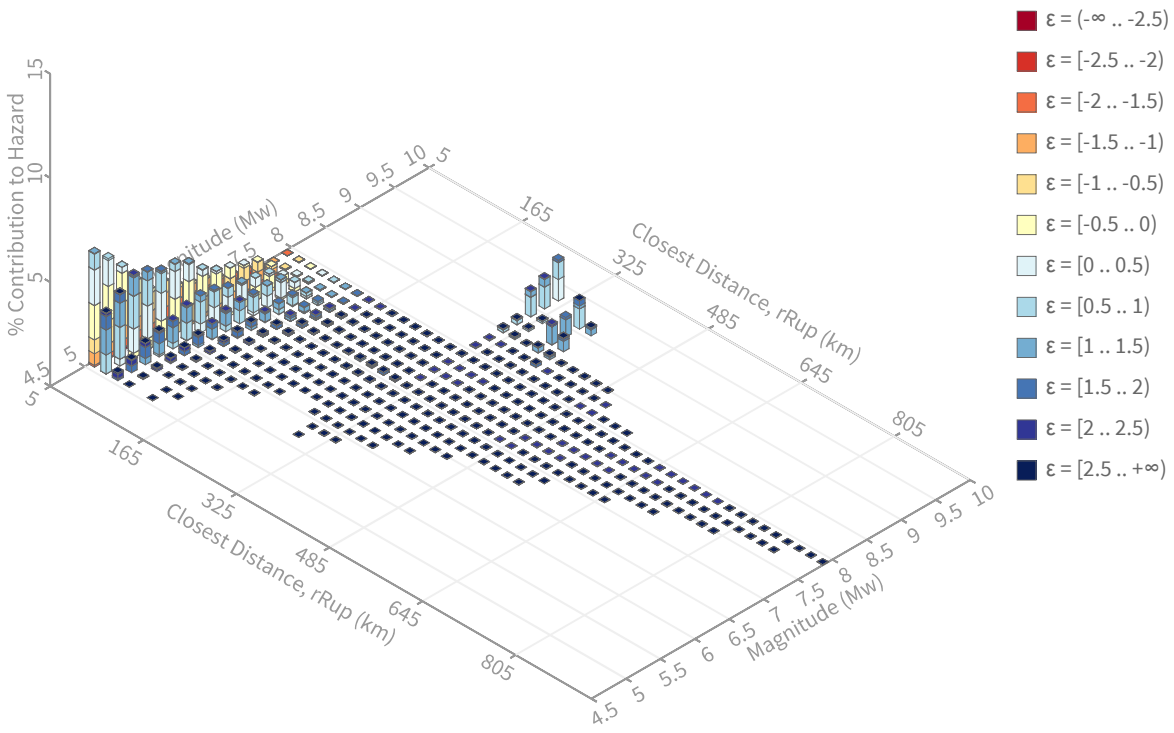


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 475 yrs
Exceedance rate: 0.0021052632 yr^{-1}
PGA ground motion: 0.068042606 g

Recovered targets

Return period: 480.39 yrs
Exceedance rate: 0.002081642 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.82 %

Mean (for all sources)

r: 69.14 km
m: 6.41
ε_0: 0.17 σ

Mode (largest r-m bin)

r: 12.18 km
m: 5.1
ε_0: -0.12 σ
Contribution: 5.45 %

Mode (largest ε_0 bin)

r: 14.97 km
m: 5.11
ε_0: 0.24 σ
Contribution: 1.7 %

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
WUSmap_2014_fixSm.ch.in (opt)	Grid							11.60
noPuget_2014_fixSm.ch.in (opt)	Grid							11.60
WUSmap_2014_fixSm.gr.in (opt)	Grid							11.45
noPuget_2014_fixSm.gr.in (opt)	Grid							11.45
noPuget_2014_adSm.ch.in (opt)	Grid							7.75
WUSmap_2014_adSm.ch.in (opt)	Grid							7.74
noPuget_2014_adSm.gr.in (opt)	Grid							7.66
WUSmap_2014_adSm.gr.in (opt)	Grid							7.65
sub0_ch_bot.in	Interface							4.46
Cascadia Megathrust - whole CSZ Characteristic		307.65	9.11	0.71	123.413° W	46.300° N	286.44	4.46
sub0_ch_mid.in	Interface							3.09
Cascadia Megathrust - whole CSZ Characteristic		360.99	8.92	1.13	124.137° W	46.300° N	284.38	3.09
WUSmap_2014_fixSm_M8.in (opt)	Grid							2.83
noPuget_2014_fixSm_M8.in (opt)	Grid							2.83
noPuget_2014_adSm_M8.in (opt)	Grid							1.89
WUSmap_2014_adSm_M8.in (opt)	Grid							1.89

Attachment H-3.
Probabilistic Seismic Hazard Deaggregation – 2,475-Year Return Time

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Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition
Dynamic: Conterminous U.S. 201

Spectral Period
Peak ground acceleration

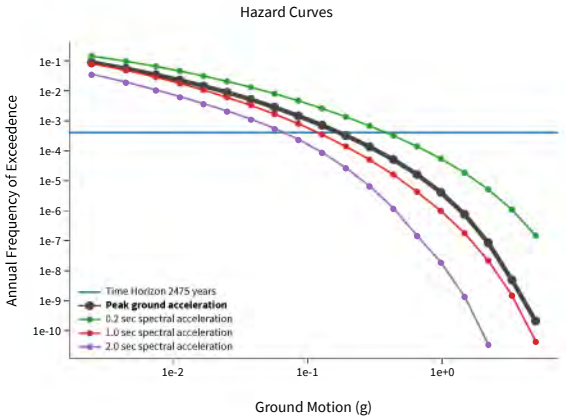
Latitude
Decimal degrees
45.585514

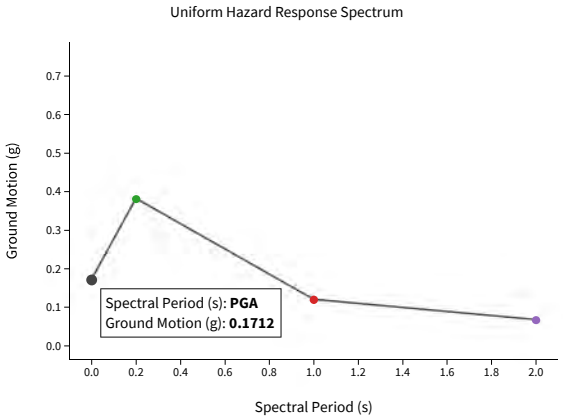
Time Horizon
Return period in years
2475

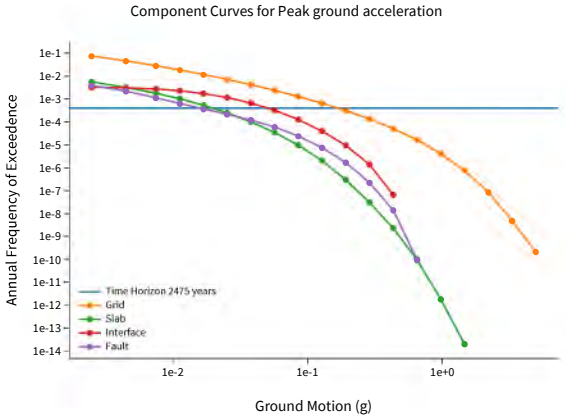
Longitude
Decimal degrees, negative values for western lo…
-119.598669

Site Class
760 m/s (B/C boundary)

Hazard Curve





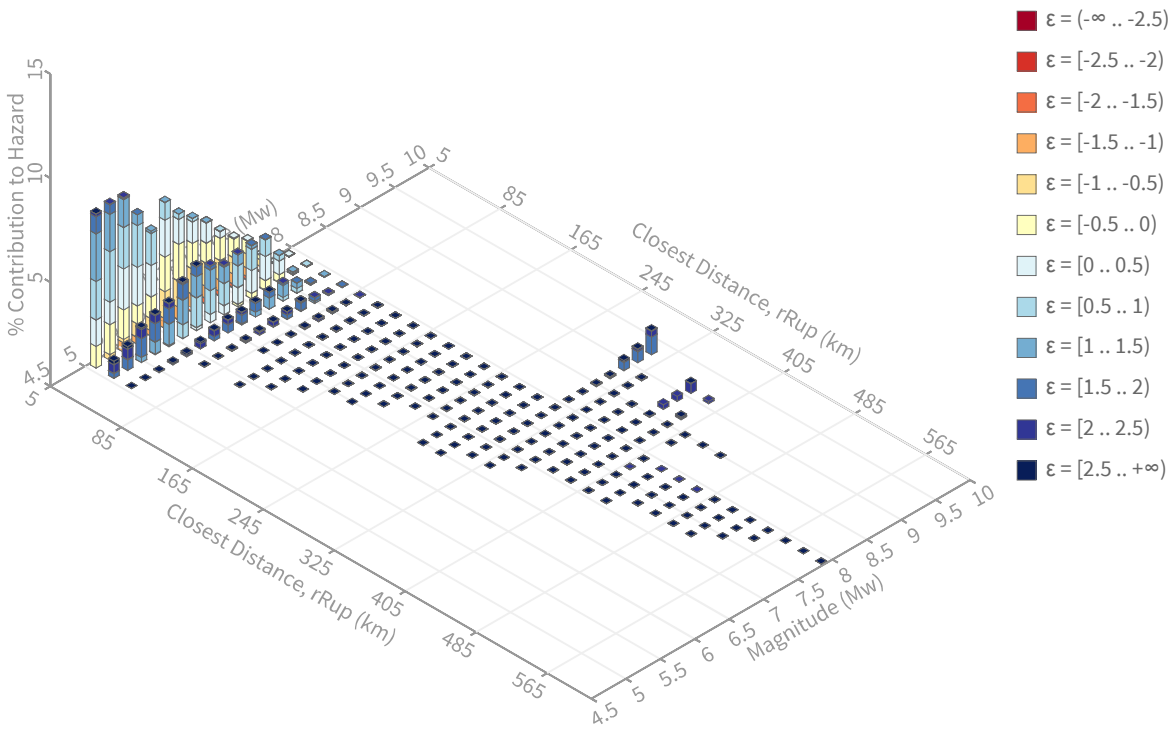


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.17118233 g

Recovered targets

Return period: 2541.2382 yrs
Exceedance rate: 0.00039350897 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.37 %

Mean (for all sources)

r: 31.18 km
m: 6.28
ε_0: 0.52 σ

Mode (largest r-m bin)

r: 10.7 km
m: 5.3
ε_0: 0.61 σ
Contribution: 7.48 %

Mode (largest ε_0 bin)

r: 11.12 km
m: 5.3
ε_0: 0.74 σ
Contribution: 2.43 %

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
WUSmap_2014_fixSm.ch.in (opt)	Grid							12.67
PointSourceFinite: -119.599, 45.698		12.47	5.92	0.26	119.599° W	45.698° N	0.00	1.47
PointSourceFinite: -119.599, 45.599		5.27	5.63	-0.60	119.599° W	45.599° N	0.00	1.36
noPuget_2014_fixSm.ch.in (opt)	Grid							12.67
PointSourceFinite: -119.599, 45.698		12.47	5.92	0.26	119.599° W	45.698° N	0.00	1.47
PointSourceFinite: -119.599, 45.599		5.27	5.63	-0.60	119.599° W	45.599° N	0.00	1.36
WUSmap_2014_fixSm.gr.in (opt)	Grid							12.63
PointSourceFinite: -119.599, 45.698		12.47	5.92	0.26	119.599° W	45.698° N	0.00	1.47
PointSourceFinite: -119.599, 45.599		5.27	5.63	-0.60	119.599° W	45.599° N	0.00	1.36
noPuget_2014_fixSm.gr.in (opt)	Grid							12.63
PointSourceFinite: -119.599, 45.698		12.47	5.92	0.26	119.599° W	45.698° N	0.00	1.47
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WUSmap_2014_fixSm_M8.in (opt)	Grid							3.13
noPuget_2014_fixSm_M8.in (opt)	Grid							3.13
sub0_ch_bot.in	Interface							2.21
Cascadia Megathrust - whole CSZ Characteristic		307.65	9.15	1.82	123.413° W	46.300° N	286.44	2.21
noPuget_2014_adSm_M8.in (opt)	Grid							2.12

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
WUSmap_2014_adSm_M8.in (opt)	Grid							2.11

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Attachment H-4.
Response Spectrum – Site Class C

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USGS Design Maps Summary Report

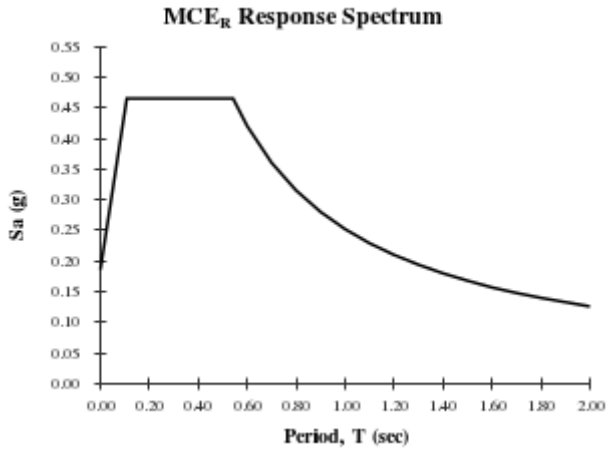
User–Specified Input

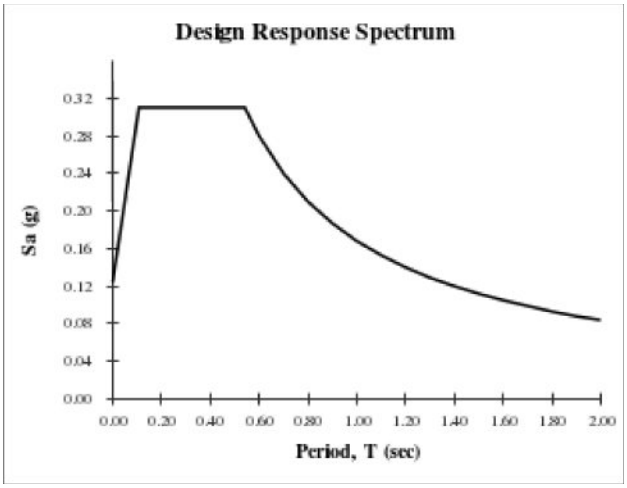
Report Title	Wheatridge Solar Project Tue October 30, 2018 21:37:17 UTC
Building Code Reference Document	2012/2015 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	45.58551°N, 119.59867°W
Site Soil Classification	Site Class C – "Very Dense Soil and Soft Rock"
Risk Category	I/II/III

USGS–Provided Output

S_S =	0.387 g	S_{MS} =	0.465 g	S_{DS} =	0.310 g
S_1 =	0.153 g	S_{M1} =	0.252 g	S_{D1} =	0.168 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





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Attachment H-5.
Response Spectrum – Site Class C Mapped Acceleration Parameters

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Design Maps Detailed Report

2012/2015 International Building Code (45.58551°N, 119.59867°W)

Site Class C – “Very Dense Soil and Soft Rock”, Risk Category I/II/III

Section 1613.3.1 — Mapped acceleration parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_s) and 1.3 (to obtain S_1). Maps in the 2012/2015 International Building Code are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 1613.3.3.

From Figure 1613.3.1(1) [1] $S_s = 0.387$ g

From Figure 1613.3.1(2) [2] $S_1 = 0.153$ g

Section 1613.3.2 — Site class definitions

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class C, based on the site soil properties in accordance with Section 1613.

2010 ASCE-7 Standard – Table 20.3-1
SITE CLASS DEFINITIONS

Site Class	$\overline{v}_s$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index PI > 20, • Moisture content w ≥ 40%, and • Undrained shear strength $\overline{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 1613.3.3 — Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters

TABLE 1613.3.3(1)
VALUES OF SITE COEFFICIENT F_a

Site Class	Mapped Spectral Response Acceleration at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = C and S_S = 0.387 g, F_a = 1.200

TABLE 1613.3.3(2)
VALUES OF SITE COEFFICIENT F_v

Site Class	Mapped Spectral Response Acceleration at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = C and S_1 = 0.153 g, F_v = 1.647

Equation (16-37):	$S_{MS} = F_a S_S = 1.200 \times 0.387 = 0.465$ g
Equation (16-38):	$S_{M1} = F_v S_1 = 1.647 \times 0.153 = 0.252$ g

Section 1613.3.4 — Design spectral response acceleration parameters

Equation (16-39):	$S_{DS} = ⅔ S_{MS} = ⅔ \times 0.465 = 0.310$ g
Equation (16-40):	$S_{D1} = ⅔ S_{M1} = ⅔ \times 0.252 = 0.168$ g

Section 1613.3.5 — Determination of seismic design category

TABLE 1613.3.5(1)
SEISMIC DESIGN CATEGORY BASED ON SHORT-PERIOD (0.2 second) RESPONSE ACCELERATION

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 0.310 g, Seismic Design Category = B

TABLE 1613.3.5(2)
SEISMIC DESIGN CATEGORY BASED ON 1-SECOND PERIOD RESPONSE ACCELERATION

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.168 g, Seismic Design Category = C

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 1613.3.5(1) or 1613.3.5(2)" = C

Note: See Section 1613.3.5.1 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 1613.3.1(1)*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/IBC-2012-Fig1613p3p1(1).pdf
2. *Figure 1613.3.1(2)*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/IBC-2012-Fig1613p3p1(2).pdf

Attachment H-6. Sample Solar Facility Emergency Action Plan

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1200 Wall Street West
5th Floor
Lyndhurst, NJ 07071

201.933.5541 PHONE
201.933.5601 FAX

www.trcsolutions.com

April 6, 2018

Town of East Hampton Planning Board
300 Pantigo Place, Suite 103
East Hampton, New York 11937

Subject: Site Plan/Special Permit Application for the
Montauk Energy Storage Center, LLC
SCTM #300-27-4-8.8
10 N Shore Road
Montauk, New York

Dear Planning Board:

TRC Environmental Corporation, on behalf of Montauk Energy Storage Center, LLC, is submitting six copies of the final Emergency Action and Safety Plan for the Montauk Energy Storage Project. This is being submitted to fulfill condition 3.4 of the site plan/special permit approval issued for the project.

Please review the attached submittal. If you have any questions or desire clarification on any aspect of this request, please feel free to call me at 201.508.6956.

Sincerely,
TRC

Marc Lawlor
Senior Project Manager
Planning, Permitting & Licensing

Enclosures

Cc: J. Pahwul, E. Schantz
TRC Project #263750

TABLE OF CONTENTS

1.0 DOCUMENT STORAGE AND INFORMATION

This Emergency Action Plan is stored in the Power Generation Division Operational Model ("OpModel").

2.0 REVISION HISTORY

Rev #	Revision Description	Approved By Position / Title	Effective Date
0	Emergency Action Plan for the Montauk Energy Storage Project	Ryan McMorrow Engineering & Technical Services Staff Engineer	Commercial Operation

3.0 PURPOSE AND SCOPE

The purpose of this Emergency Action Plan is to establish the planned response actions that will be taken by remote Control Room Operators that oversee the 24/7 operation of the Montauk Energy Storage Project and other emergency personnel. These actions are intended to provide for the safe and reliable operation of the facility.

This procedure serves as guidance and is intended to be a "living" document such that revisions over time, based on experiences, will continue to increase the speed of identification of threats and decrease response time. When applicable, this plan applies to all employees, contractors, vendors and visitors, performing work at the site.

This facility will not be manned on a daily basis and will be remotely operated by the 24/7 manned Fleet and Performance Diagnostic Center (Control Room) located in Juno Beach, Florida. In addition, a communication link is established between the Control Room Operator and first responders.

The Control Room will be provided with a remote monitoring system, as well as, a video surveillance monitoring system that is both internal and external to the buildings.

Site Postings: The following will be posted conspicuously on-site:

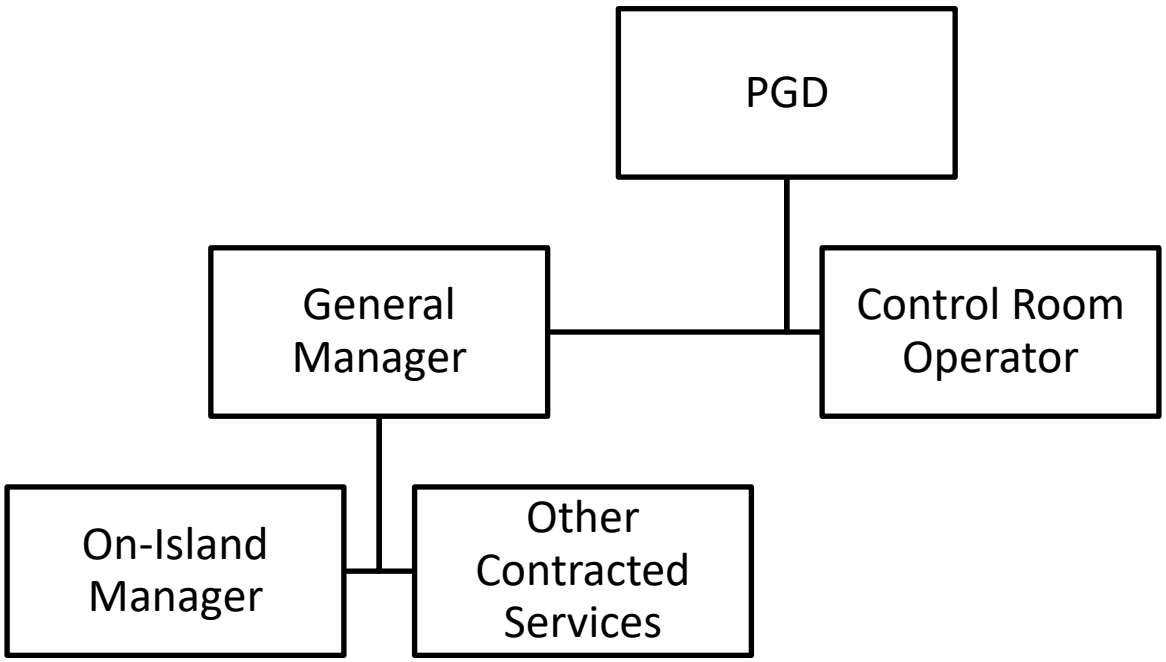
- Emergency phone numbers:
  Control Room
  On-Island Manager
  Local Fire Department

- A diagram indicating location of fire extinguishers, standpipes and fire hydrants will be posted at entrances of the facility.
- Instructions on-site personnel need to follow during emergencies, as a result of injury or in response to environmental releases or security issues.

4.0 DEFINITIONS

PGD – Power Generation Division
FPDC – Fleet Performance and Diagnostic Center (“Control Room”)
O&M – Operations and Maintenance
OSHA – Occupational Safety and Health Administration
PPE – Personal Protective Equipment

5.0 ORGANIZATIONAL CHART



General Manager - will have overall responsibility for the Montauk Energy Storage Project.
On-Island Manager – will have delegated decision authority in emergency situations.
Control Room Operator – will have delegated decision authority in emergency situations.

6.0 PERSONAL PROTECTIVE EQUIPMENT

The appropriate Personal Protective Equipment (PPE) shall be used by O&M workers and contractors according to the task. The requirements for PPE are dictated based upon the expected hazards of the task. These may include hard hats, safety shoes, safety glasses and work gloves.

7.0 RECORDS

An electronic copy of this plan will also be accessible online.

This plan will be reviewed upon implementation, whenever revisions are made, and at least annually by the On-Island Manager.

Copies of this plan will also be kept on-site and at the offices of the On-Island Manager.

8.0 PROCEDURE

TRAINING

1. All O&M personnel that may work at the site that will have access to the facility shall receive training on this Emergency Action Plan initially and whenever it is modified.

    - A listing of personnel with current training on this plan will be maintained by the On-Island Manager and in Juno Beach, Florida for reference purposes.

2. Postings will be placed at the site near telephones and at exits clearly indicating the telephone number of the Control Room and any instructions to follow during emergencies or as a result of injury to people on-site.

FACILITY LOCATION INFORMATION FOR OUTSIDE EMERGENCY RESPONDERS

1. The Montauk Energy Storage Project is located at 10 North Shore Road, Hamlet of Montauk, Town of East Hampton, Suffolk County, NY 11954. Outside responders can gain access to the facility by accessing the driveway.

PLANT / SITE GENERAL EMERGENCY PROCEDURE

1. This emergency plan was developed for the following plausible contingencies that could transpire at the facility:

    - Severe Weather Event Plan (APPENDIX 1)
    - Fire Prevention and Response (APPENDIX 2)
    - Environmental Event (APPENDIX 3)

2. It will be the responsibility of the Control Room Operator to assess a developing emergency situation and initiate the appropriate actions in this plan to protect any personnel that may be at the site, the surrounding environment, and plant equipment from adverse impacts.

3. In the event of an on-site emergency, including injury, physical damage, fire, security breach, etc. the on-site personnel, if any, should follow and perform the below actions immediately. For environmental releases, follow the Call Tree in Appendix 3.

    - Contact 911 or Fire Department immediately.
    - Have the Control Room Operator perform an analysis on the requirements for continued safe operation.
    - Initiate site shutdown procedure (if required).
    - Ensure that key personnel are contacted:

Title	Name	Office Phone	Cell Phone
Environmental Response Team	Miller Environmental – Long Island Operations: **George Wallace**	800-394-8606 (24-Hours)	631-369-4900 (Main)
On-Island Manager	Miller Environmental: **George Wallace**	N/A	631-369-4900 (Main)
Project General Manager	**Lynden McKay**	561-691-2344	561-927-8467
Control Room Operator	1) Fleet & Performance Diagnostic Center (FPDC) 2) FPDC Manager: **Kevin McWhorter**	1) 561-694-3636 (24-Hours) 2) 561-691-2515	1) N/A 2) 402-290-9275
Security Operations	1) Fleet & Performance Diagnostic Center (FPDC) 2) FPDC Manager: **Kevin McWhorter**	1) 561-694-3636 (24-Hours) 2) 561-691-2515	1) N/A 2) 402-290-9275

4. If emergency event occurs while maintenance personnel are on-site, all sources of ignition, including hot work, burning cigarettes, portable tools and motor vehicles shall be immediately secured/ceased.

5. Based upon the type and extent of the emergency, if there is anyone on-site, the Control Room Operator should assess whether an evacuation should be initiated. If maintenance personnel are on-site, they along with the Control Room Operator would make the decision to evacuate. The following criteria should be considered in rendering a decision to conduct an evacuation of the facility:

    - The affected parts of the facility and severity of the emergency.
    - Restrictions in egress routes caused by the emergency.
    - Weather.
    - People currently working at the facility (visitors/contractors, etc.)

    a. During the emergency the Control Room Operator will determine the level of system shut down required, if any.

End of Procedure

APPENDIX 1 SEVERE WEATHER EVENT PLAN

Please see following page.

Summary

Storm resistant design features include a pre-engineered, weather tight structure approximately 46' x 90' to house the system components. The structure will consist of a metal construction exterior. The facility is designed to meet extreme environmental conditions and structural loading conditions as noted below:

- **Wind load:** ASCE 7-10, Exposure D, Risk category III (Greater than 130MPH)
- **Seismic Load:** ASCE 7-10, Site Class D
- **Snow Load:** ASCE 7-10 for local conditions
- **Protected** for salt laden air

The facility is designed to remain operational and is controlled remotely by the Control Room even in severe weather events. The Control Room provides world class and state-of-the-art remote operating, monitoring, and diagnostic services. Key responsibility areas include:

- Operations & Operational Assistance
- Prevention through Prediction
- Restoration/Troubleshooting
- Communications

The Control Room provides 24/7 operational monitoring, diagnostics, and management of alarms as established by the Power Generation Division engineering and operation teams. Control Room Operators are specifically trained to interact closely with the On-Island Manager, who, together with an O&M and emergency response team, will be retained to resolve site operational and response issues.

Monitoring, Planning, and Preparation

1. Natural emergencies considered in this procedure are associated with weather disturbances such as flooding, hurricanes, blizzards, high wind conditions, and severe thunderstorms. The Control Room Operator and On-Island Manager have various means to monitor potential weather events. These include:

    - Internet access to weather-related web-sites;
    - PGDAPPS WeatherSentry Online
    - Local news stations

2. When information is received that a severe weather watch has been issued for the facility area the following actions shall be taken:

    - The Control Room Operator should notify the General Manager and the On-Island Manager

3. Severe Weather Preparation

    - In the event of a severe weather event, where advance warning is known, such as floods, hurricanes, blizzards, etc., the Control Room Operator shall closely coordinate with the On-Island Manager, during pre and post event activities. The goal is to enable the facility to continue to operate safely and reliably during a severe weather event.

        On-island resources: the On-Island Manager shall contact O&M and emergency response teams to notify them of the event and place them on standby. Emergency response team may be dispatched to the facility prior to the event to ensure the facility is physically prepared for the event by:

        - Securing the building
        - Securing all equipment
        - Securing all critical communication components
        - Deploying sandbags, if applicable

        It is not anticipated that personnel would need to access the site during the event. Under no circumstances will personnel be dispatched to the facility until local emergency management indicates it is safe to enter the area. In the event that local flooding could impact access to the site, arrangements previously made for alternative transportation will be implemented.

    - In the event of a natural disaster / sever weather event where advance warning may not be known, the Control Room Operator and the On-Island Manager will take reasonable action to prepare for the event. However, under no circumstances are personnel to place themselves in harm's way.

4. The Control Room Operator or On-Island Manager will:

    - Monitor the weather radio, TV or other monitoring equipment, and report any changes in the situation that could affect any plant / maintenance personnel on site and / or equipment. Radio

or phone communication is established if a tornado or other similar severe weather warning is issued.

5. Operations:

- Operate the plant consistent with instructions provided from the Transmission Operator. If, the instructions cannot be followed, i.e., safety, environmental, reliability, etc., immediately notify the Transmission Operator to discuss and alternative operating actions. Document discussions in the Operators log.

- When conditions are “forecasted” to have high winds associated with a hurricane, or other related conditions such as floods and / or storm surge, equipment shutdown should be taken into consideration to ensure the continued reliable operation before, during, and after the event.

    - The decision to shut down the facility as a precaution or during the event will be made after consultation with the Transmission Operator or if conditions are such that the facility would be damaged or cause a system interruption.

APPENDIX 2 FIRE PREVENTION AND RESPONSE

Preventative Controls

The facility is designed with a number of features designed to prevent system upsets that could lead to a fire.

Battery Management System

Each Battery Cell is continuously monitored by a “Battery Management System”. The Battery Management System will autonomously take action to protect battery cells and prevent over charging, over current or over temperature operation. The supplied Bidirectional Inverters have controls to detect out of specification conditions of the batteries and will autonomously stop operation in the event of overcurrent or out of specification voltage. A site controller continuously monitors all critical parameters and will autonomously disconnect the system in the event of an out of specification condition. The site is continuously monitored by an offsite 24-hour Control Room Operator. In the event of an “off spec” condition, the Control Room Operator has the ability to remotely control the facility.

Circuit Protection

Each Battery Module and Battery Rack are individually protected by overcurrent fuses. These fuses will operate independently of the DC contactor that is opened by the controls discussed above.

Battery Safety Features

Supplied battery cells, modules and racks will be provided with UL testing Certification as documented in UL-Safety Issues for Lithium Ion Batteries-2016.pdf

Fire Fighting Measures

The site will be equipped with an automatic fire suppression system utilizing water. The system will be designed by a licensed engineering firm that specializes in fire protection. Water has been shown to be the most effective fire suppressant for Lithium Ion Batteries due to its ability to both extinguish the fire and remove excess heat. The system will be designed so that the fire suppression activates in any section of the building experiencing a fire.

To facilitate emergency responders the facility is designed with a hydrant located near the entrance driveway.

Response Actions – Automated System Alarm

Should any system monitoring device indicate a fire alarm or the automatic suppression system activate and release, the Control Room Operator will immediately:

a. Verify control logic operated as required including shutting down equipment or isolating the project from the grid

b. Contact local emergency response services and provide the following information:

    1. Location
    2. Type of emergency
    3. Current Status
    4. Any other pertinent information

c. Notify the General Manager and On-Island Manager

d. Continually monitor and use all means necessary as described above to isolate the situation.

e. Contact the System Operator or Transmission Operator if appropriate

Response Actions – Personnel On-site

NOTE: The facility will have fire extinguishers located a strategic points. A diagram indicating location of fire extinguishers, standpipes and fire hydrants will be posted at entrances of the facility.

Any person discovering a fire in its incipient stage should take action as quickly as possible to extinguish the fire. In general, a fire should be considered to be in its incipient stage if it meets two primary criteria:

a. The fire can be extinguished or controlled with a single portable fire extinguisher
b. The person discovering the fire perceives an adequate level of safety in attempting to extinguish the fire.

As long as the fire is in its incipient stage, as defined above, the person discovering the fire should utilize all appropriate and readily available fire extinguishing equipment to extinguish the fire. Fire-fighting efforts beyond the incipient stage will be performed by trained outside responders only.

On-site Response Instructions:

1. For fires in incipient stage use fire extinguisher following manufacturer's instructions to extinguish.
    a. If the fire is extinguished immediately, the on-site personnel shall then notify the Control Room Operator to inform them of the incident.
2. If the fire cannot be contained using an extinguisher then evacuate the building, call 911, then the Control Room Operator.

3. If the site fire detection system is activated all personnel must evacuate the battery building immediately call 911, then the Control Room Operator.

APPENDIX 3 ENVIRONMENTAL RELEASE

The release of transformer oil is a regulated event and must be addressed as soon as possible. Releases into containment areas or to the ground must be reported upon discovery to the Control Room Operator. Containment surrounds all oil filled equipment.

Whether the release is the result of an operational action (e.g., maintenance) or is discovered, site personnel should take action if possible to stop the release or contain the oil. Such action may include closing valves, berming areas with absorbents if available or dirt, or laying down spill absorbent pads. Personnel should only respond at their level of training. Clean-up operations will be performed by a professional response team.

Gather the following information and relay it to the Control Room Operator:

- Transformer leaking oil.
- Whether or not the spill is only in the containment.
- If the source of the spill/release has been stopped.
- Boundaries describing the area of the spill if outside the containment.
- Quantity released (if it can be estimated).
- Environmental Impacts (ground, roadways, etc.).

The Control Room Operator shall make the following notifications:

Organization	Contact Number	Time Notified
Environmental Response Team: Miller Environmental – Long Island Operations: **George Wallace**	Miller Environmental 800-394-8606 (24 hours)	
On-Island Manager: Miller Environmental: **George Wallace**	Cell: 631-369-4900	
NYS Dept. of Environmental Conservation Spill Hotline	1-800-457-7362	Spill Number assigned: _____
Suffolk County Dept of Health Services	1-631-854-2501	
National Response Center (only if impacts water resources)	1-800-424-8802	Incident Number: _____

Exhibit I

Soil Conditions

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
BMP	Best management practices
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
DOGAMI	Oregon Department of Geology and Mineral Industries
Facility	Wheatridge Wind Energy Facility
IBC	International Building Code
OAR	Oregon Administrative Rules
RFA	Request for Amendment

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts, to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation, as well as energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 megawatts of solar energy generation, for a total Facility maximum peak generating capacity of 650 megawatts.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit I identifies the soil conditions and land uses dependent on soil conditions that are in compliance with the soil standard found in Oregon Administrative Rule (OAR) 345-022-0022 and follows the submittal requirements in OAR 345-021-0010 (1)(i) paragraphs (A) through (E). The information summarized in this exhibit and described in RFA 4 demonstrates that the Facility, as proposed, can be designed, engineered, constructed, operated, and retired in a manner that satisfies the applicable Council standards. The proposed changes in RFA 4 do not alter the Certificate Holder's ability to comply with the Council's earlier findings and approved conditions in the previously amended site certificates. Site Certificate conditions applicable to soils include (ODOE 2017):

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

- PRE-SP-01: SPCC construction plans
- PRE-SP-02: Restoration of agricultural soils
- PRE-SP-03: Septic system permitting
- OPR-SP-01: Prevention of erosion, soil disturbance
- CON-SP-01: Erosion and Sediment Control Plan (ESCP)
- CON-SP-02: Best management practices to be included in ESCP
- PRO-SP-01: Submission of operational SPCC

2.0 Analysis Area

The Analysis Area for soil resources is the Site Boundary (the Approved Site Boundary plus the Amended Site Boundary). However, conditions have not changed within the Approved Site Boundary, and no modifications to approved facilities are proposed. Therefore, this exhibit focuses on new information related to the solar arrays and the area within the Amended Site Boundary (Figure I-1).

3.0 Identification and Description of Soil Types – OAR 345-021-0010(1)(i)(A)

OAR 345-021-0010(1)(i) Information from reasonably available sources regarding soil conditions and uses in the analysis area, providing evidence to support findings by the Council as required by OAR 345-022-0022, including:

OAR 345-021-0010(1)(i)(A) Identification and description of the major soil types in the analysis area.

The near-surface soils in the Amended Site Boundary were identified using the Soil Survey Geographic Database for Morrow and Umatilla counties, Oregon (NRCS 2018). The survey describes soil conditions in the upper 5 feet of the subsurface profile and classifies land use. Nine soil units were identified by the Natural Resources Conservation Service within the Amended Site Boundary. A general description of each soil unit mapped in the Amended Site Boundary is provided in Table I-1, below. Figure I-1 shows the soil units for the Amended Site Boundary.

- **Ferguson Very Fine Sandy Loam —** This soil unit consists of very deep, well drained soils formed in volcanic ash over predominantly granitic glaciofluvial deposits. Ferguson soils are on outwash fans. The hazard for erosion is high. Slopes are primarily 30 to 60 percent in the Amended Site Boundary. This soil has moderate to high permeability and low runoff.

- **Gravden Very Gravelly Loam —** This soil unit consists of shallow, well drained soils that formed in alluvium of mixed origin. The hazard for erosion is high. Slopes are primarily 20 to 40 percent in the Amended Site Boundary. This soil has low permeability and high runoff.
- **Lickskillet Very Stony Loam —** This soil consists of shallow, well drained soils that formed in stony colluvium consisting of loess, rock fragments and residuum weathered from basalt and rhyolite. Lickskillet soils are on uplands, and are about 1.4 inches thick. The hazard for erosion is high. Slopes are primarily 7 to 40 percent in the Amended Site Boundary. The soil has low permeability and high runoff.
- **Mues Silt Loam —** This soil consists of very deep, moderately well drained soils formed in mixed alluvium on stream terraces. The hazard for erosion is slight. Slopes are primarily 0-3 percent in the Amended Site Boundary. The soil has moderate permeability and moderately high runoff.
- **Ritzville Silt Loam** — This soil unit consists of soils formed in loess on summit plateaus within the analysis area. Typically, the surface layer and subsoil are each brown very fine sandy loam, about 13 inches thick, respectively. The substratum is a brown silt loam to a depth of 70 inches or more. Effective rooting depth is 60 inches or more. Runoff is slow for slopes less than 7 percent, medium for slopes 7 to 20 percent, and rapid for slopes greater than 20 percent. The hazard of water erosion is moderate to high. The hazard of wind erosion is moderate. Slopes are primarily 2 to 12% in the Amended Site Boundary.
- **Walluski Silt Loam —** This soil consists of very deep, moderately well drained soils formed in moderately fine textured alluvium on terraces. The hazard for erosion is moderately low to moderately high. Slopes are primarily 0 to 7 percent in the Amended Site Boundary. The soil has moderate permeability and moderately high runoff.
- **Quincy Loamy Fine Sand —** This soil consists of very deep, excessively drained soils formed in sands on dunes and terraces. The hazard for erosion is moderate. Slopes are primarily 0 to 5 percent in the Amended Site Boundary. The soil has high permeability and low runoff.
- **Willis Silt Loam —** This soil unit consists of soils formed in loess on summit plateaus within the analysis area. The surface layer is dark brown silt loam about 12 inches thick. The subsoil is dark brown silt loam about 15 inches thick. The substratum is a dark brown silt loam to a depth of approximately 35 inches, and the soil is underlain by cemented alluvium. Effective rooting depth is 20 to 40 inches. Runoff is medium. The hazard of water erosion is high. The hazard of wind erosion is low to moderate. Slopes are primarily 2 to 12 percent in the Amended Site Boundary.

Table I-1. General Description of Mapped Soil Units in Analysis Area

Soil Type ID	Soil Unit	Setting Within Analysis Area	Approximate Thickness	Formation Setting	Permeability	Runoff	Hazard for Erosion
78	Ferguson very fine sandy loam	30 to 60 percent south slopes	>5 feet	Eolian sands and alluvium	Moderate to High	Low	Severe
13E	Gravden very gravelly loam	20 to 40 percent slopes	>5 feet	Gravelly alluvium and colluvium	Low	High	Severe
28E	Lickskillet very stony loam	7 to 40 percent slopes	1.4 feet	Loess mixed with colluvium from basalt	Low	High	Severe
45A	Mues silt loam	0 to 3 percent slopes	>5 feet	Loess mixed with small amounts of volcanic ash	Moderately Low to Moderately High	Moderately High	Slight
45B	Ritzville silt loam	2 to 7 percent slopes	>5 feet	Loess mixed with small amounts of volcanic ash	Moderate to High	Low	Moderate
45C	Ritzville silt loam	7 to 12 percent slopes	>5 feet	Loess mixed with small amounts of volcanic ash	Moderate to High	Low	Severe
47E	Murtip-Caterl complex	30 to 60 percent slopes	4.2	Loess mixed with small amounts of volcanic ash	Moderate to High	Low	Severe
71B	Walluski silt loam	0 to 7 percent slopes	>5 feet	Loess over calcareous lacustrine deposits	Moderately Low to Moderately High	Moderately High	Moderate
75B	Quincy loamy fine sand	0 to 5 percent slopes	>5 feet	Loess over cemented alluvium	High	Low	Moderate
75C	Willis silt loam	5 to 12 percent slopes	>5 feet	Loess over cemented alluvium	Moderately Low to Moderately High	Moderately High	Severe

4.0 Current Land Use within the Analysis Area – OAR 345-021-0010(1)(i)(B)

OAR 345-021-0010(1)(i)(B) Identification and description of current land uses in the analysis area, such as growing crops, that require or depend on productive soils.

The land uses within the Analysis Area consist of private agricultural land generally used for dryland wheat production or rangeland, and is zoned Exclusive Farm Use by Morrow County (see Exhibit K). The Analysis Area does not contain soils defined as High Value Farmland by the Natural Resources Conservation Service (NRCS 2018).

5.0 Facility Soil Impacts – OAR 345-021-0010(1)(i)(C)

OAR 345-021-0010(1)(i)(C) Identification and assessment of significant potential adverse impact to soils from construction, operation and retirement of the facility, including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.

5.1 Soil Impacts During Construction

Construction of the solar arrays will require a variety of activities that have the potential for adversely impacting soils. Activities that may result in potential adverse soil impacts include:

- Clearing and grubbing of vegetation in temporary construction areas, solar array, and new access roads;
- Grading and widening of existing access roads;
- Constructing new access roads;
- Hauling heavy equipment and other truck traffic for the delivery of aggregates, concrete, water, solar components, and construction supplies; and
- Fueling or maintenance of construction equipment or vehicles.

Up to approximately 893 acres would be permanently impacted by the Amended Site Boundary. Construction would temporarily disturb a total of approximately 8 acres of soil. Impacts to soil, such as erosion, resulting from construction activities would be limited through:

- Avoiding sensitive soil areas to the extent practicable;
- Maintaining a Spill Prevention Control and Countermeasures Plan (Condition PRE-SP-01);
- Implementing appropriate site restoration practices following construction (Condition PRE-SP-02); and

- Implementing the erosion and sediment control best management practices (BMPs) included in the final Erosion and Sediment Control Plan, as required by the National Pollutant Discharge Elimination System Construction Stormwater Discharge General permit 1200-C (Condition PRO-SP-01).

5.2 Soil Impacts During Operation

Operations of the solar arrays would have no impact on soil erosion. As identified in Condition OPR-SP-01, the Certificate Holder will routinely inspect and maintain all Facility components, and as necessary, maintain or repair erosion and sediment control measures. Vehicles will be restricted to constructed access roads to avoid unnecessary compaction, erosion, or spill risk (Condition OPR-SP-01). No additional ground disturbance is anticipated to occur during operation of the solar arrays. Condition OPR-SP-01 also identified that if the Certificate Holder intends to substantially modify an existing road or construct a new road, Council approval will be needed prior to the modification. The potential for soil contamination would be limited by not maintaining substantial supplies of hazardous materials on-site, and by observing appropriate safety measures during maintenance procedures. In addition, Condition CON-SP-01 requires the Certificate Holder to provide a copy of an Oregon Department of Environmental Quality-approved operational Spill Prevention Control and Countermeasures Plan, if required.

5.3 Soil Impacts During Decommissioning

In the event of decommissioning, potential erosion hazards would be similar to those occurring during construction. Measures similar to those employed during construction and operation through required Site Certificate Conditions will be used during decommissioning to prevent and control erosion, to rectify for soil compaction, to prevent spills, and to revegetate disturbed areas.

6.0 Mitigation Measures – OAR 345-021-0010(1)(i)(D)

OAR 345-021-0010(1)(i)(D) A description of any measures the applicant proposes to avoid or mitigate adverse impact to soils.

As described above, there are many Site Certificate Conditions in place which require minimization measures and BMPs be utilized throughout the construction, operation, and decommissioning (if necessary) phases of the Facility. The portions of the Analysis Area that will be graded are expected to result in a balanced cut-and-fill quantity of earthwork to maintain the existing conditions to the extent practical for the protection of the equipment and facilities. The following provide example BMPs, that along with any others identified in the Erosion and Sediment Control Plan, may be implemented, as necessary, to minimize impacts:

- **Stabilized Construction Entrance/Exit –** A stabilized construction entrance/exit will be installed at locations where construction vehicles will access newly constructed roads

and/or disturbed areas from paved roads. The stabilized construction entrance/exits will be inspected and maintained for the life of the Facility.

- **Dust abatement measures –** Compact fill as necessary and implement appropriate dust abatement measures such as restriction of vehicle speeds, watering of active areas, watering of stockpiles, watering on roadways, track-out control at site exits, and other measures.
- **Preserve Existing Vegetation –** To the extent practicable, existing vegetation will be preserved. Where vegetation clearing is necessary, root systems would be conserved if possible.
- **Silt Fencing –** Silt fencing will be installed throughout the construction area as a perimeter control, material stockpile perimeter control, and on the contour down gradient of excavations.
- **Straw Wattles –** Straw wattles may be used to decrease the velocity of sheet flow stormwater to prevent erosion. Wattles will be used along the downgradient edge of access roads adjacent to slopes or sensitive areas.
- **Mulching –** Mulch will be used to immediately stabilize areas of soil disturbance and during reseeding efforts.
- **Stabilization Matting –** Jute matting, straw matting, or turf reinforcement matting may be used in conjunction with mulching to stabilize steep slopes that were exposed during access road installation.
- **Soil Binders and Tackifiers –** Soil binders and tackifiers may be used on exposed slopes to stabilize them until vegetation is established.
- **Concrete Washout Area –** Concrete chutes and trucks will be washed out in dedicated areas near foundation construction locations. This will prevent concrete washout water from leaving a localized area. Soil excavated for the concrete washout area will be used as backfill for the completed footing to ensure that the surface soils maintain infiltration capacity.
- **Stockpile Management –** Soil from excavations will be temporarily stockpiled and used on site. Silt fence will be installed around the stockpile material as a perimeter control. Mulch or plastic sheeting will be used to cover the stockpiled material, if needed. Stockpiles will be watered, if needed to reduce erosion. Soils will be stockpiled and reused, in order to prevent mixing of productive topsoils with deeper subsoils.
- **Revegetation –** At the completion of land disturbing construction activities, the site will be revegetated with an approved seed mix. When required, the seed will be applied in conjunction with mulch and/or stabilization matting to protect the seeds as the grass establishes. Revegetation will take place as soon as practicable following construction.

- **Check Dams and Sediment Traps –** Check dams and sediment traps will be used during the construction of low-impact ford crossings or culvert installations. The check dams and sediment traps will minimize downstream sedimentation during construction of the stream crossings.
- **Pollutant Management –** During construction, source control measures will be implemented to reduce the potential of chemical pollution to surface water or groundwater during construction. Chemical pollution could occur as a release of diesel fuel or lubricating oils, or from improper debris and waste handling. Small quantities of fuels and oils may be maintained on-site during construction and operation, and will be stored in a dedicated area, and construction vehicles will be fueled and maintained only in dedicated areas. Spills would be cleaned up immediately.
- **Construction Timing –** To the extent practicable, construction activities will be scheduled to occur in the dry season, when soils are less susceptible to compaction. Similarly, soil disturbance should be postponed when soils are excessively wet such as following a precipitation event.

7.0 Monitoring Program – OAR 345-021-0010(1)(i)(E)

OAR 345-021-0010(1)(i)(E) The applicant's proposed monitoring program, if any, for adverse impact to soils during construction and operation.

As discussed in Section 5.1, Condition PRO-SP-01 requires implementation of a final Erosion and Sediment Control Plan that will include construction monitoring requirements as approved by Oregon Department of Environmental Quality. In addition, Section 5.2 identified Condition OPR-SP-01, which requires the Certificate Holder to routinely inspect and maintain all Facility components, and as necessary, maintain or repair erosion and sediment control measures.

8.0 Conclusions

The potential for soil erosion and contamination during construction will be minimized by avoiding problematic areas to the extent practical and then by adherence to the Site Certificate Conditions identified above. Specific construction and site restoration practices will be implemented to mitigate construction impacts on soil productivity. There will be no adverse impacts to productive farmland soils except where permanent impacts are proposed. Taking into account the implementation of the existing Site Certificate Conditions, Council may conclude that the design, construction and operation of the Facility, as proposed, is not likely to result in a significant adverse impact to soils.

9.0 References

NRCS (Natural Resources Conservation Service). 2018. United States Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) Database for Oregon. Accessed at: http://soildatamart.nrcs.usda.gov.

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Figures

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure I-1
Exhibit I
Soils Map

MORROW COUNTY, OR

Approved Site Boundary
(Approved Wind Micrositing Corridors)

Amended Site Boundary
(Proposed Solar Micrositing Corridors)

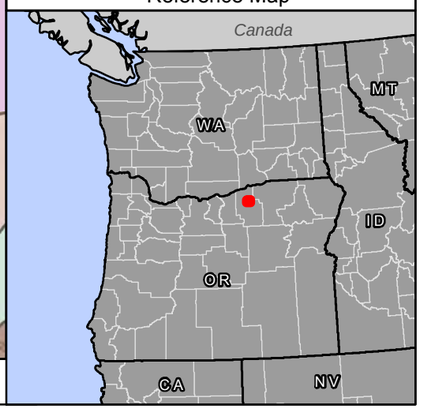
Mapunit Symbol - Mapunit Name

- 13E - Gravden very gravelly loam, 20 to 40 percent slopes
- 28E - Lickskillet very stony loam, 7 to 40 percent slopes
- 45A - Mues silt loam, 0 to 3 percent slopes
- 45B - Ritzville silt loam, 2 to 7 percent slopes
- 45C - Ritzville silt loam, 7 to 12 percent slopes
- 47E - Murtip-Caterl complex, 30 to 60 percent slopes
- 71B - Walluski silt loam, 0 to 7 percent slopes
- 75B - Quincy loamy fine sand, 0 to 5 percent slopes
- 75C - Willis silt loam, 5 to 12 percent slopes
- 78 - Ferguson very fine sandy loam, 30 to 60 percent south slopes

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:33,461 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

Data sources: Wheatridge Wind Endergy: project facilities / ESRI: roads, political boundaries / NRCS: SSURGO soils

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Exhibit J

Wetlands and Other Jurisdictional Waters

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
CFR	Code of Federal Regulations
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	megawatts
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statutes
RFA 4	Request for Amendment 4
WOS	Waters of the State
WOUS	Waters of the United States

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit J provides information related to regulated waters of the State (WOS) and waters of the United States (WOUS), as required by Oregon Administrative Rule (OAR) 345-021-0010(1)(j) paragraphs (A) through (F), in consideration of the proposed changes. As detailed in the following sections, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder will not require a removal-fill permit.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

2.0 Analysis Area

The Analysis Area for wetlands and other waters is the area within the Site Boundary. The Site Boundary is defined in detail in Exhibits B and C. As the Facility within the Approved Site Boundary, presented in the Application for Site Certificate (ASC; Wheatridge 2015) and subsequent amendments, was already reviewed by the Council for potential impacts to wetlands and other waters, this exhibit focuses on the Amended Site Boundary or the solar micrositing corridors (Figure J-1). The Certificate Holder acknowledges that if the location of proposed solar facilities changes to areas outside of these corridors, additional delineations may be required.

3.0 Wetlands and Other Jurisdictional Waters – OAR 345-021-0010(1)(j)(A)

OAR 345-021-0010(1)(j) Information based on literature and field study, as appropriate, about waters of this state, as defined under ORS 196.800, including:

OAR 345-021-0010(1)(j)(A) A description of all areas within the site boundary that might be waters of this state and a map showing the location of these features.

The following sections summarize wetlands and other waters as identified by the Certificate Holder. Descriptions of the wetlands and other waters are presented in the Wetland Delineation Report (Attachment J-1). Maps showing locations reviewed as part of the desktop evaluation are found in Figure J-1 and Attachment J-1. Delineated features can be found in Figure J-2 and Attachment J-1.

In the ASC, nine wetlands and 61 streams (six of which were WOS) were delineated within the Approved Site Boundary (Wheatridge 2015). As detailed below, no wetlands or jurisdictional waters were identified within the Amended Site Boundary, as proposed by RFA 4.

3.1 Definitions

3.1.1 Federal

WOUS are defined in 33 Code of Federal Regulations (CFR) 36 328.3(a)(1-7) as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or

natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

c) Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as WOUS under the definition;
5. Tributaries of waters identified in paragraphs (a) (1) through (4) of this section;
6. The territorial seas; and
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1) through (6) of this section.

Wetlands are defined federally at 33 CFR § 328.3(b) as "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

3.1.2 State

Oregon Revised Statutes (ORS) 196.800(14) defines WOS more broadly than WOUS. Specifically, WOS include "all natural waterways, tidal and non-tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, that portion of the Pacific Ocean that is in the boundaries of this state, all other navigable and non-navigable bodies of water in this state and those portions of the ocean shore, as defined in ORS 390.605, where removal or fill activities are regulated under a state-assumed permit program as provided in 33 United States Code 1344(g) of the Federal Water Pollution Control Act, as amended."

The Oregon Department of State Land's definition of wetlands mirrors the federal definition; see OAR 141-085-0510 (101).

3.2 Jurisdictional Versus Non-Jurisdictional Waters

Not all wetlands and streams are within the jurisdiction of state or federal regulation, and not all waters falling within the state's jurisdiction fall under federal jurisdiction. For the Facility, several jurisdictional distinctions are important to estimate impacts only to jurisdictional wetlands and other waters.

These include determinations related to the following:

- Ephemeral streams, which generally are not under state jurisdiction, and are evaluated on a case-by-case basis for federal jurisdiction—as distinct from perennial and intermittent (USACE 2005, USACE 2008a).
- Artificially created roadside and farm ditches, which are considered WOS if they contain food or game fish and are connected to WOS (OAR 141-085-0515(8)), and WOUS if they connect to other WOUS and are not ephemeral (EPA and USACE 2011).

Ephemeral streams are defined in the Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015) as streams that flow:

> "…only in direct response to precipitation. Water typically flows only during and shortly after large precipitation events. An ephemeral stream may or may not have a well-defined channel, the stream bed is always above the water table, and stormwater runoff is the primary source of water. An ephemeral stream typically lacks biological, hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water."

In contrast, intermittent streams are defined by Oregon as "any stream which flows during a portion of every year and which provides spawning, rearing or food-producing areas for food and game fish" (OAR 141-085-0510(46)). Food-producing streams are typically one stream order above a fish-bearing stream.

Based on the definitions of jurisdictional waters given above, intermittent streams are likely to be jurisdictional under federal regulations if they have physical characteristics such as discernible banks, evidence of sustained surface flow for at least 3 consecutive months of the year, and a surface water connection to other WOUS.

3.3 Desktop Study

Prior to field work, the Certificate Holder reviewed the National Wetlands Inventory and the National Hydrography Dataset (Oregon Spatial Data Library 2018, NWI 2018, NHD 2018), hydric soils data (NRCS 2018), and aerial photographs (FSA 2016) to identify potential wetlands and other waters. Desktop review of the National Wetlands Inventory data and aerial photography showed no wetlands in the Amended Site Boundary. Natural Resources Conservation Service soil survey data indicated that there were no hydric soils. The National Hydrography Dataset showed no perennial streams within the Amended Site Boundary; the intermittent streams in this dataset were assessed in the field and found to be ephemeral (see Section 3.4). Additional information on the desktop evaluation is provided in Attachment J-1.

3.4 Delineation of Wetlands and Other Water Features

3.4.1 Methods

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Amended Site Boundary. The field survey and delineation of waters were carried out on August 22 and 23, 2018, and November 9, 2018; all parcels were assessed, and the delineation is complete.

The field investigation utilized the following guidance documents and procedures:

- Arid West Region Supplement (USACE 2008b);
- Wetlands Delineation Manual, Technical Report Y-87-1 (USACE 1987);
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- OAR 141-090, Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State.

Additional details regarding methodology are provided in Attachment J-1.

3.4.2 Results

No wetlands or jurisdictional waters were found within the Amended Site Boundary (Figure J-2). Table J-1 presents the seven ephemeral streams and one roadside drainage ditch delineated in field surveys, totaling less than an acre. None of these waters have the characteristics identified in Sections 3.1 and 3.2 for jurisdictional waters, nor do they connect to any downstream waterbody that would be WOS or WOUS; therefore, none of the identified water features are jurisdictional under state or federal regulation. Additional details regarding field results are provided in Attachment J-1.

Table J-1. Summary of Wetlands, Other Water Features, and Roadside Drainage Ditches

Feature Name	Feature Type	Acreage	Connects to WOS/WOUS?
EPH-001	Ephemeral stream	0.11	No
EPH-002	Ephemeral stream	0.03	No
EPH-003	Ephemeral stream	0.05	No
EPH-004	Ephemeral stream	0.03	No
EPH-005	Ephemeral stream	0.20	No
EPH-007	Ephemeral stream	0.31	No

Feature Name	Feature Type	Acreage	Connects to WOS/WOUS?
EPH-008	Ephemeral stream	0.03	No
Total Other Waters Acreage		**0.75**	–
RD1	Roadside Drainage Ditch	0.04	No
Total Roadside Drainage Ditch Acreage		**0.04**	–

4.0 Effects on Wetlands and Other Jurisdictional Waters of the State – OAR 345-021-0010(1)(j)(B)(C)

OAR 345-021-0010(1)(j)(B) An analysis of whether construction or operation of the proposed facility would adversely affect any waters of this state.

OAR 345-021-0010(1)(j)(C) A description of the significance of potential adverse impacts to each feature identified in (A), including the nature and amount of material the applicant would remove from or place in the waters analyzed in (B).

As demonstrated in Section 3, there are no wetlands or other jurisdictional waters within the Amended Site Boundary, as proposed by RFA 4. Therefore, no material would be removed from or placed in any WOS, and the Facility would not adversely affect any WOS.

The wetlands and other jurisdictional waters delineated in the ASC are located outside of the Amended Site Boundary (Wheatridge 2015). No changes proposed under RFA 4 would impact the WOS identified in the ASC; therefore, there would be no change to the Council's previous finding: that no WOS would be impacted by the Facility (ODOE 2017).

5.0 Information Supporting Lack of Requirement for Removal-Fill Permit – OAR 345-021-0010(1)(j)(D)

OAR 345-021-0010(1)(j)(D) If the proposed facility would not need a removal-fill authorization, an explanation of why no such authorization is required for the construction and operation of the proposed facility.

As described in Sections 3 and 4, there are no wetlands or other jurisdictional waters within the Amended Site Boundary, and therefore the modifications proposed under RFA 4 will not impact WOS. WOS identified in the ASC would not be impacted by the Facility (ODOE 2017). Therefore, the Facility would not impact WOS, and removal-fill authorization is not required.

6.0 Information Supporting Issuance of Removal-Fill Permit – OAR 345-021-0010(1)(j)(E)

OAR 345-021-0010(1)(j)(E) If the proposed facility would need a removal-fill authorization, information to support a determination by the Council that the Oregon Department of State Lands should issue a removal-fill permit, including information in the form required by the Department of State Lands under OAR Chapter 141 Division 85.

There are no wetlands or jurisdictional waters within the Amended Site Boundary; therefore, no removal-fill authorization is required, and this section is not applicable.

7.0 Mitigation and Monitoring Program – OAR 345-021-0010(1)(j)(F)

OAR 345-021-0010(1)(j)(F) A description of proposed actions to mitigate adverse impacts to the features identified in (A) and the applicant's proposed monitoring program, if any, for such impacts.

The Facility will have no adverse impacts to wetlands or other jurisdictional waters, as none are present within the Amended Site Boundary and no WOS identified in the ASC will be impacted by the Facility as previously approved (ODOE 2017). Therefore, no monitoring or mitigation is proposed.

8.0 References

Cowardin, L.M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31.

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Oregon Spatial Data Library. 2018. Available URL: http://oregonexplorer.info/wetlands/DataCollections/GeospatialData. Accessed: 2018.

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USACE. 2008b. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2). ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Wheatridge (Wheatridge Wind Energy, LLC). 2015. Wheatridge Wind Energy Facility Application for Site Certificate. Prepared by Tetra Tech, Inc. July 2015.

Figures

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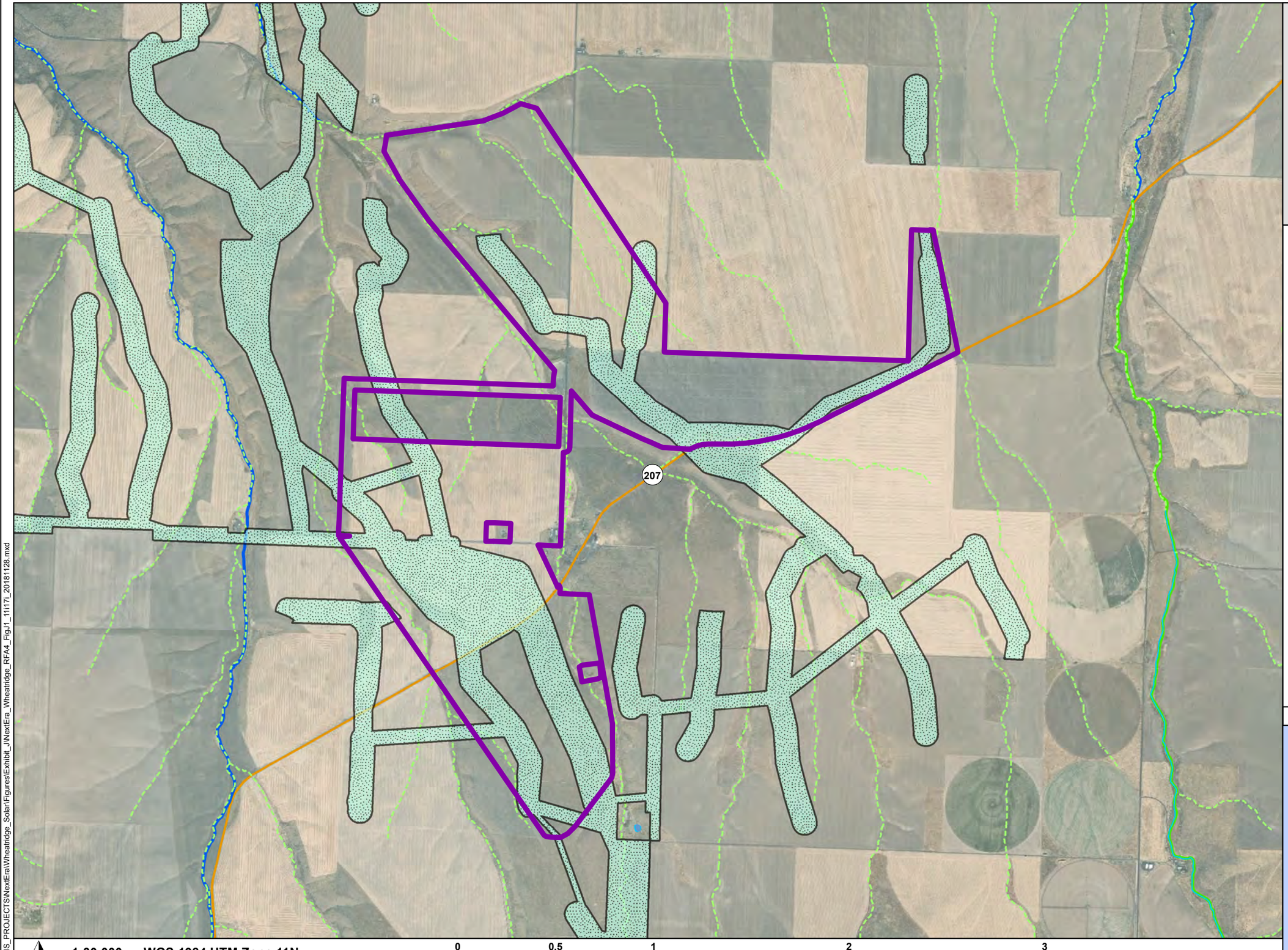
Wheatridge Wind Energy Facility Request for Amendment 4

Figure J-1 National Wetland Inventory and National Hydrography Data

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Boundary

NHD Waterbodies

- Perennial Stream/River
- Intermittent Stream/River
- Intermittent Lake/Pond

NWI Waterbodies

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

N

1:30,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 Miles

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure J-2 Delineated Waters

MORROW AND UMATILLA COUNTIES, OR

Figure J-2.1
Figure J-2.2
Figure J-2.3
Figure J-2.4

Umatilla County
Morrow County

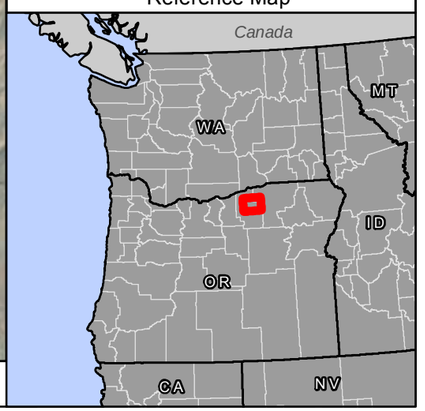
207
74
74, 207

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Boundary
- Map Grid

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:130,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.1
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR

Little Juniper Ln

Bombing Range Rd

Barrak Martin Rd N

Strawberry Ln

Lexington-Echo Hwy

207

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

N

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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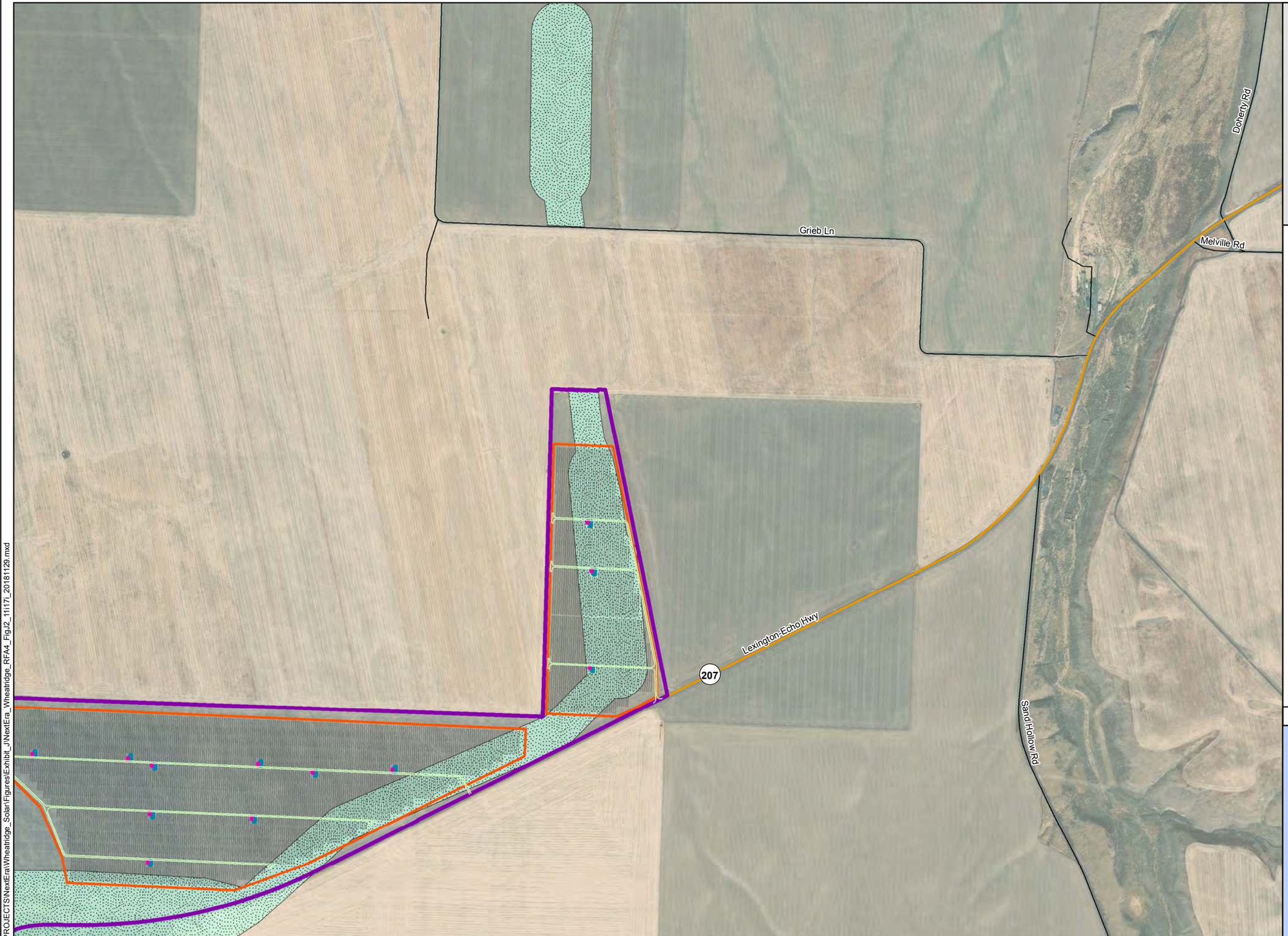
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.2
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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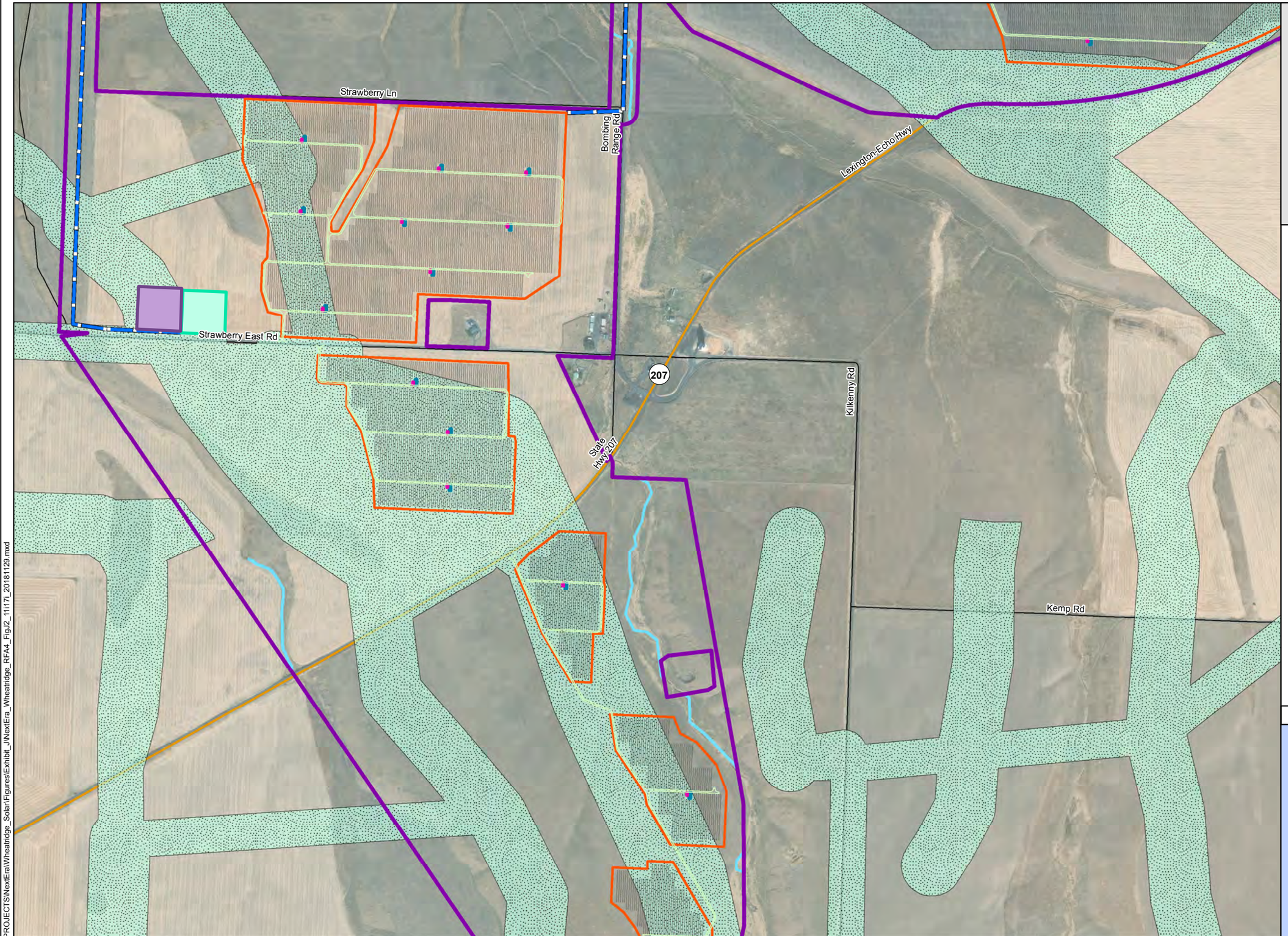
Wheatridge Wind Energy Facility Request for Amendment 4

Figure J-2.3 Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



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- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
- Local Road
- County Boundary

Facility Layout

- Solar Access Roads
- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

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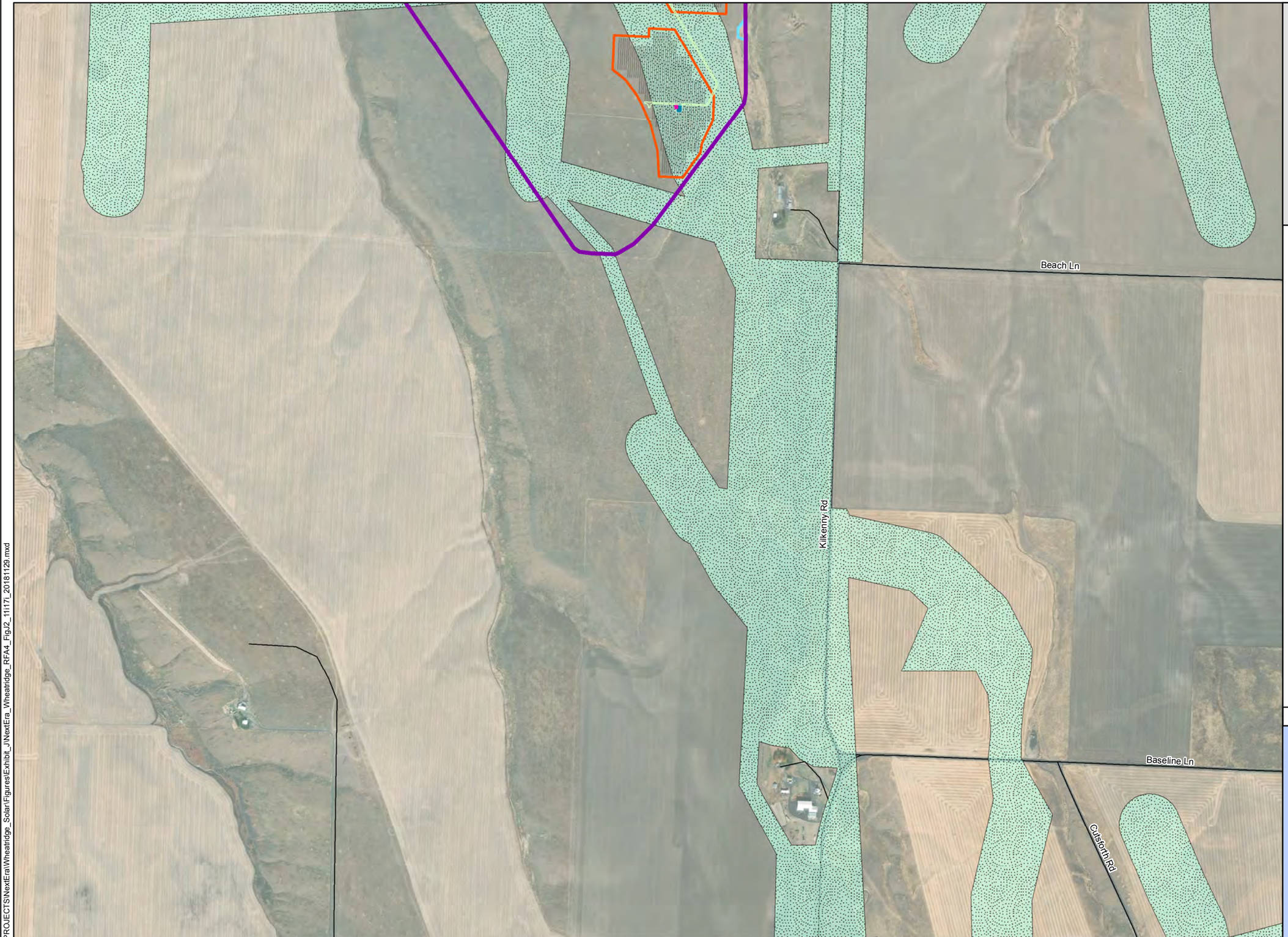
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure J-2.4
Delineated Waters

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- County Highway
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Facility Layout

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- Proposed Collector Line
- Proposed Substation
- Approved Substation
- Solar Fenceline
- Solar Tracker
- Inverter Skid
- Distributed Energy Storage

Water Class - Delineated

- Ephemeral

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

1:12,000 WGS 1984 UTM Zone 11N

0 0.25 0.5 1 Miles

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Attachment J-1. Wheatridge Solar Assessment Wetlands and Waters Report

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Wheatridge Solar Assessment Wetlands and Waters Report

Prepared for

Prepared By

Tetra Tech, Inc.

November 2018

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Table of Contents

List of Tables

List of Appendices

Acronyms and Abbreviations

EPA	Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
LRR B	Columbia/Snake River Plateau Land Resource Region
NHD	National Hydrography Dataset
NI	No Wetland Species Indicator
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OAR	Oregon Administrative Rule
OBL	Obligate wetland
Project	Wheatridge Solar Assessment
Tetra Tech	Tetra Tech, Inc.
USDA	US Department of Agriculture
WETS	Climate Analysis for Wetlands Tables

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1.0 Introduction

Wheatridge Wind Energy, LLC contacted Tetra Tech, Inc. (Tetra Tech) to provide siting and permitting support for an up to 310 megawatt (MW) Wheatridge Solar Project (Project) within the existing Wheatridge Wind Energy Facility Lease Boundary. The Project is located in Morrow and Umatilla counties, Oregon (Appendix A, Figure 1).

Tetra Tech completed wetlands and waters surveys on August 22-23 and November 9, 2018. The purpose of these surveys was to confirm the National Wetlands Inventory (NWI) data and the information gathered during a biological reconnaissance survey (spring 2018) on the presence of wetland and water features within the solar siting area.

2.0 Landscape Setting and Land Use

2.1 Study Area

The Project study area for wetlands and other potentially jurisdictional waters is divided into two locations—Wheatridge West and Wheatridge East. Wheatridge West is a 232-acre site located entirely within Morrow County, approximately 5 miles northeast of Lexington, and approximately 7 miles northwest of Heppner (Appendix A, Figure 1). Wheatridge West is bisected by Oregon Highway 207 (OR-207), with sections extending north and south of OR-207 along Strawberry Land and Bombing Range Road. Wheatridge East is a 550-acre site, located in Umatilla County, approximately 16 miles northeast of Heppner in a remote area accessible by gravel roads and unimproved two-track roads.

Appendix A, Figure 2 shows the tax lots crossed by the study area and Appendix B, Table B-3 lists the township, range, and sections within the Project study area.

2.2 Landscape Setting

The Project is located within the Level III Columbia Plateau Ecoregion, and within the further subdivided Level IV Umatilla Plateau (Thorson et al. 2003). In addition, the Project is within U.S. Department of Agriculture (USDA) Land Resource Region (LRR) B, Northwest Wheat and Range Region (NRCS 2006). The U.S. Army Corp of Engineers Wetland Delineation Manual Regional Supplement associated with LRR B is the *Arid West Region (Version 2.0)* (Arid West Supplement) (USACE 2008).

This ecoregion is characterized by a nearly flat to rolling, treeless plateau, underlain by basalt with layers of loess deposits. Glacial features, such as patterned ground, are common. Thicker loess deposits are farmed for grain and chemically fallowed every other season. Rangeland dominates areas of thin loess deposits and other soils. The climate within this ecoregion is arid due to the rain-shadow effect of the Cascade Mountains. Most of this ecoregion receives less than 15 inches of

precipitation a year, with some areas receiving as little as eight inches (OSU 2010). The low annual precipitation supports semi-arid grassland, and sagebrush steppe. Non-native cheatgrass (*Bromus tectorum*) inhabits vast areas of this ecoregion (Franklin and Dyrness 1988).

The ephemeral waterways in all of the Project study area are dominated by cheatgrass and ventenata (*Ventenata dubia*) and often have basin big sagebrush (*Artemisia tridentata spp. tridentata*) both inside the channels and on the banks.

2.3 Land Use

The study area generally encompasses rural lands. Towns within proximity to the Project include the cities of Lexington and Heppner in Morrow County, and Echo in Umatilla County. Much of the historic native grassland and shrub-steppe habitat within the study area has been converted for agricultural use since European settlement in the mid-1800s.

The Wheatridge West Project area is almost entirely in a dryland winter wheat/chemical fallow rotation due to the low annual precipitation rate and lack of irrigation water in this region. The remaining land in the Wheatridge West Project area has been converted from farmland to introduced and native grasses dominated by tall wheatgrass (*Thinopyrum ponticum*) and bluebunch wheatgrass (*Pseudoroegneria spicata*) in deeper soils, and invasive cheatgrass (*Bromus tectorum*) in the shallower soils.

Wheatridge East Project area is mostly dryland wheat/chemical fallow and is bordered by rangeland and ephemeral streams. The rangeland is actively grazed and is predominately populated by introduced grass species.

2.4 NWI, NHD, NRCS, and Local Wetland Inventory Mapped Features

Prior to field work, Tetra Tech reviewed NWI, the National Hydrography Dataset (NHD), hydric soils data, and aerial photographs from the Farm Service Agency to identify potential wetlands and other waters, as described below.

2.4.1 National Wetlands Inventory and Local Wetland Inventory Data

Desktop review of NWI data showed no wetlands in the Project area. There is no Local Wetland Inventory available at this location (ODSL 2018). Figure 3 in Appendix A shows the NWI map layered over the Project study area.

2.4.2 Hydric Soils Data

Seventeen soil map units are mapped in the Project study area (Appendix A, Figure 4; NRCS 2018a). There are no soils with a hydric component within the Project study area. Table 1 below summarizes the soil types found within the study area.

Table 1. Soils Mapped in the Project Study Area

Map Unit Code	Map Unit Name	Acres	Percent of Study Area	Percent Hydric Soil
13E	Gravden very gravelly loam, 20 to 40 percent slopes	152.26	5.35	0
15B	Burke silt loam, 1 to 7 percent slopes	147.69	5.19	0
15C	Burke silt loam, 7 to 12 percent slopes	76.68	2.70	0
28E	Lickskillet very stony loam, 7 to 40 percent slopes	65.25	2.29	0
43A	Kimberly silt loam, 0 to 3 percent slopes	49.38	1.74	0
45A	Ritzville silt loam, 0 to 2 percent slopes	133.92	4.71	0
45B	Ritzville silt loam, 2 to 7 percent slopes	415.37	14.60	0
45C	Ritzville silt loam, 7 to 12 percent slopes	50.65	1.78	0
47E	Ritzville silt loam, 20 to 40 percent south slopes	40.55	1.43	0
48E	Lickskillet very stony loam, 7 to 40 percent slopes	25.79	0.91	0
71B	Warden silt loam, 2 to 5 percent slopes	7.96	0.28	0
75B	Willis silt loam, 2 to 5 percent slopes	1344.38	47.25	0
75C	Willis silt loam, 5 to 12 percent slopes	25.05	0.88	0
78	Xeric Torriorthents, nearly level	58.89	2.07	0
80B	Ritzville silt loam, 2 to 7 percent slopes	0.01	0.00	0
89B	Shano silt loam, 2 to 7 percent slopes	151.32	5.32	0
89C	Shano silt loam, 7 to 12 percent slopes	99.99	3.51	0

2.4.3 National Hydrography Dataset

The NHD shows no perennial streams within the Project study area. There are intermittent stream lines present on the NHD maps within the Project study area and those were used to determine field survey locations.

3.0 Site Alterations

Site alterations are those activities that that directly or indirectly impact wetlands and other waters such that the function or area of the feature changes significantly. A significant alteration would be one that renders the feature non-functioning, or one that changes the boundaries. Land use in the

Project study area is generally dominated by agricultural activities including wheat farming and open range grazing. Tillage practices are changing across the region and the conversion to reduced till and no-till methods of farming have decreased the amount of overland flow and increased the infiltration rates on site. The alterations associated with these practices may have affected the geographic size and/or the hydroperiod of wetlands and other waters. Some waters that were delineated in the study area are likely to have had historically higher flows due to runoff from the farmed fields that wouldn't be present with the new farming practices.

4.0 Precipitation Data and Analysis

Average historical monthly precipitation data and daily precipitation data for the periods preceding and during field work were obtained from the National Oceanic and Atmospheric Administration's National Weather Service (NOAA 2018) (Table 2). The closest geographical location with an Natural Resources Conservation Service (NRCS) WETS table is Pendleton, Oregon, 36 miles to the east and approximately 500 feet higher in elevation than the project area (NOAA 2018).

Total accumulated precipitation between November 1, 2017 and November 9, 2018, was 59 percent of average due to below-average precipitation in almost every month. Based on the precipitation data for the 3 months prior to each of the site visits, it was estimated that groundwater was below what is usually encountered at this time of year (Table 2).

Lower than normal precipitation levels did not affect the delineation of waters as determinations of intermittent versus ephemeral stream were made using indicators described in the Streamflow Duration Assessment Method for the Pacific Northwest (SDAM) (Nadeau 2015). The SDAM relies on multiple indicators independent of the presence/absence of hydrology.

4.1 August 22-23, 2018 Site Visits

For the 10-day span preceding and during field work no precipitation was measured (NOAA 2018). Monthly precipitation for August 2018 was 0 percent of average. Monthly precipitation totals in May, June, and July 2018 were below normal at 39 percent, 40 percent, and 0 percent, respectively.

4.2 November 9, 2018 Site Visit

For the 10-day span preceding and during field work, 0.1 inches of precipitation was measured (NOAA 2018). Monthly precipitation for October 2018 was 123 percent of average. Monthly precipitation in July, August, and September 2018 were markedly below normal at 0 percent, 4 percent, and 0 percent, respectively.

Table 2. Precipitation Data – Current and Historical (Inches)

Precipitation	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov 1-9, 2018	Annual Total to Date (Nov 9, 2018)
Recorded Monthly Precipitation Totals[1] (inches); (Pendleton, OR)	1.56	1.22	1.59	0.74	1.38	1.71	0.65	0.42	0	0.03	0	1.63	0.1	11.03
WETS Accumulated Monthly Averages[2] (inches); (Pendleton, OR)	2.35	1.99	1.94	1.63	1.92	1.65	1.67	1.06	0.39	0.72	0.83	1.33	1.22	18.7
Recorded Precipitation Relative to Average Monthly Precipitation (Pendleton, OR)	66%	61%	82%	45%	72%	104%	39%	40%	0%	4%	0%	123%	8%	59%
Cumulative Water Year Precipitation (inches); (Pendleton, OR)	1.56	2.78	4.37	5.11	6.49	8.2	8.85	9.27	9.27	9.3	9.3	10.93	11.03	11.03

1. NOAA 2018
2. WETS Table for Pendleton, OR

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5.0 Methods

5.1 Pre-field Work

In preparation for the field work, Tetra Tech reviewed NWI, NHD, Local Wetland Inventory, hydric soils data, and aerial photographs to identify potential wetlands and other waters, as described in the preceding sections. Tetra Tech prepared digital field maps with these data and uploaded these maps onto a Samsung Android data collection tablet to assist field staff in identifying the locations of probable wetlands and non-wetland waters within or adjacent to the Project study area.

Wetlands and surface water data were obtained from the Oregon Wetlands Database, which includes NWI and miscellaneous wetland mapping by state and federal agencies, non-governmental organizations, academia and consultants, and from the NHD (Oregon Spatial Data Library 2018; NWI 2018; NHD 2018). Soils data were also obtained from the Oregon Wetlands Database, which includes statewide polygon cover of hydric, partially hydric, and related wetland soils (Oregon Spatial Data Library 2018), as well as from the NRCS Web Soil Survey (NRCS 2018b). Tetra Tech used high-resolution USDA National Agriculture Imagery Program imagery captured during 2016 because it provided recent 1-meter resolution aerial imagery taken during the peak of the growing season (USDA-FSA AFPO 2016).

The following guidance documents and procedures were reviewed:

- Arid West Supplement (USACE 2008);
- Wetlands Delineation Manual, Technical Report Y-87-1 (the Manual) (USACE 1987);
- Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015);
- Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979); and
- Oregon Administrative Rules 141-090, Administrative Rules for Wetland Delineation Report Requirements and for Jurisdictional Determinations for the Purpose of Regulating Fill and Removal within Waters of the State.

5.2 Field Work

Field investigations for the delineation of wetlands and other waters included pedestrian surveys within the Project study area. Tetra Tech conducted the field survey and delineation of waters on August 22 & 23, and November 9, 2018. The desktop surface water data were used to focus the non-wetlands water evaluation as necessary.

5.2.1 Wetland Delineations

Wetland presence was determined as per methods in the Manual and the Arid West Supplement. No wetland indicators were found at any of the low elevation sites on the landscape nor were they found within the ephemeral streambeds.

5.2.2 Non-wetland Waters Evaluations

- Flow duration for non-wetland waters was determined using the Streamflow Duration Assessment Method for the Pacific Northwest (Nadeau 2015). Details on mapping methods are presented in Section 8.0.
- Ordinary High Water Mark was determined based on criteria such as changes in the character of the soil, sediment, litter or debris deposition, changes in vegetation, and scour lines.
- The centerline of non-wetland waters less than 6 feet in width was recorded as a line feature and buffered to the stream width determined in the field.
- Photographs were taken to document streams, ditches, and upland conditions at locations that NHD mapped as streams (Appendix C, Photolog).

5.2.3 Roadside Drainage Ditch Evaluations

- Roadside drainage ditches that were delineated were assessed based on guidance in the Oregon Department of State Lands *A Guide to the Removal-Fill Permit Process* (ODSL 2016).
- The centerline of drainage ditches was recorded as a line feature and buffered to the width determined in the field.

6.0 Description of Wetlands, Other Non-wetland Waters, and Roadside Drainage Ditches

All wetlands, non-wetland waters, and roadside drainage ditches evaluated in the Project study area are depicted in Appendix A; Figure 5 map set.

6.1 Wetlands

There are no wetlands within the Project study area.

6.2 Non-wetland Waters

Seven ephemeral streams and one roadside drainage ditch were delineated within the Project study area (Appendix B, Table B-2). There was no water present in the ditch at the time of survey and field staff did not observe any location where the ditch connected with any type of waterbody. The desktop study shows that the ditch does not connect to any mapped waterway.

7.0 Deviation from NWI

The NWI showed no wetlands in the Project study area. Field surveys confirmed this finding.

8.0 Mapping Methods

Water centerlines and photograph locations were recorded using a Juniper Geode series GPS unit, configured to differentially correct positions in real-time using the Satellite Based Augmentation System, which typically results in positional error of less than 1 meter (Juniper Systems 2018).

Water centerlines were recorded as line features using GPS units set to collect vertices every 2 seconds. Field staff walked the centerline of the ephemeral streams and the roadside drainage ditch with the GPS unit in hand, at a pace consistent with creating an accurate representation of the water feature.

9.0 Results and Conclusions

Using methods recommended in the Manual and Arid West Supplement, no wetlands were found in the Project study area (Table 3). One roadside ditch and seven ephemeral streams were delineated.

Table 3. Summary of Wetlands, Other Water Features, and Roadside Drainage Ditches

Feature	Number of Features	Acres
Ephemeral Stream	7	0.75
Roadside Ditch	1	0.04

10.0 Disclaimer

This disclaimer is included according to OAR 141-090-0035(12)(j): "This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of my knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055."

11.0 References

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Appendix A. Figures

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

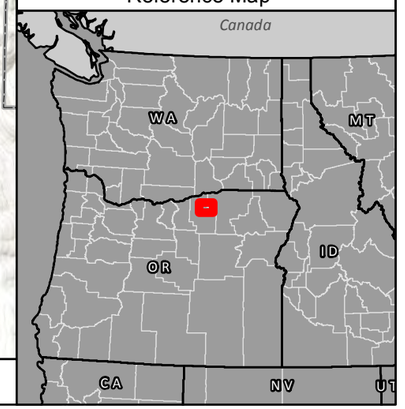
Figure 1
Project Location

MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Secondary Road
- County Boundary

TETRA TECH

Reference Map



Umatilla County
Morrow County

Bombing Range Rd
Juniper Rd
Little Juniper Ln
Strawberry Ln
Grieb-Wood Rd
Barak-Martin Rd
Lindsay Feedlot Ln
Alpine Ln
Wagon Trail Rd
Melville Ln
Carpenter Butte
Barclay Ln
Kemp Ln
Beach Ln
Baseline Rd
Sand Hollow Rd
Sandhollow Rd
Butter Creek Rd
Madison Sayler Rd
Eagle Ranch Rd
Gordon Creek Rd
Mule Hollow
Big Butter Creek Ln
Pine City Rd
Morris Butte
Gleason Butte
SERVICE BUTTES
SERVICE CANYON
207
578

1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 2
Tax Lot Index Map

MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Figure 2 Map Grid
- Secondary Road
- County Boundary

TETRA TECH

Reference Map

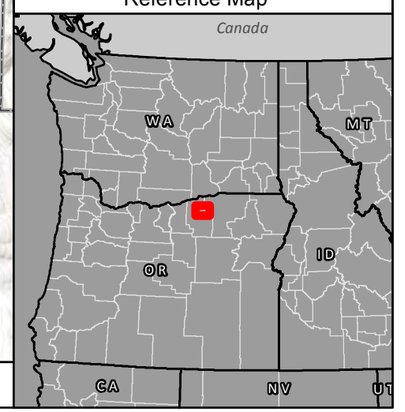

Figure 2.1

Figure 2.2

1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

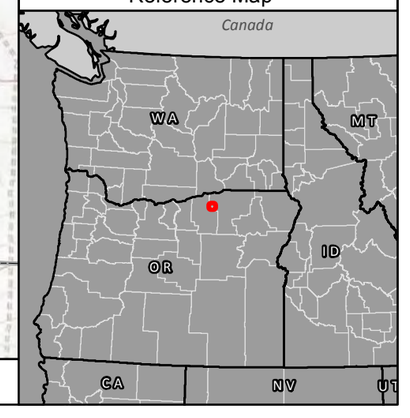
Figure 2.1
Tax Lot Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area
Taxlot Boundary
County Boundary

TETRA TECH

Reference Map



2N28000001900

Umatilla County
Morrow County

UMATILLA CO
MORROW CO

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

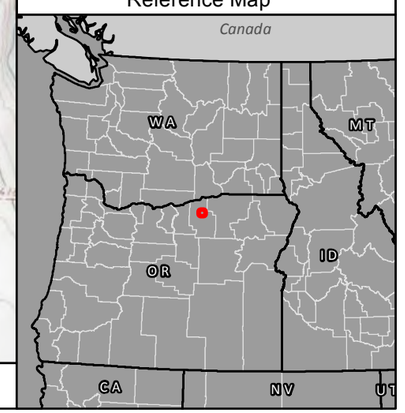
Figure 2.2
Tax Lot Detail Map

MORROW AND UMATILLA COUNTIES, OR

Taxlot 10N, 260E 0 1100
Taxlot 10N 260E 0 1301
Taxlot 10N 260E 0 1102
Taxlot 10N 260E 0 1500
Taxlot 10N 250E 0 1600
Taxlot 10N 260E 0 1200
Taxlot 10N 260E 0 2700
Taxlot 10N 260E 0 3200
Taxlot 10N 260E 0 3201
Taxlot 10N 260E 0 3301
Taxlot 10N 260E 0 2900
Taxlot 10N 260E 0 2805
Taxlot 10N 260E 0 3600
Taxlot 10N 250E 0 3100
Taxlot 10N 260E 0 3300
Taxlot 10N 260E 0 3400
Taxlot 10N 260E 0 3502
Taxlot 10N 260E 0 3500

Study Area
Taxlot Boundary
Secondary Road
County Boundary

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 3
National Wetland Inventory Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 3.1

Figure 3.2

Butter Creek

Umatilla County

Morrow County

Little Butter Creek

- Study Area
- Figure 3 Map Grid
- County Boundary

NWI Waterbodies

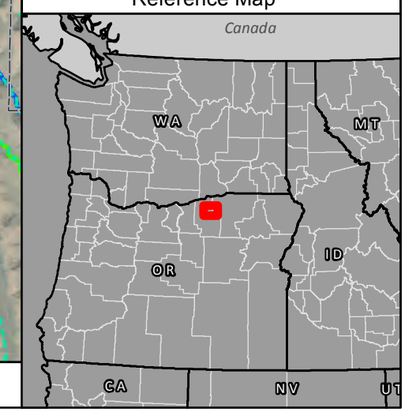
- Freshwater Emergent Wetland
- Shrub Wetland/Freshwater Forest
- Freshwater Pond
- Riverine

NHD Waterbodies

- Perennial Stream/River
- Intermittent Stream/River
- Canal/Ditch

TETRA TECH

Reference Map



1:100,000 WGS 1984 UTM Zone 11N

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 3.1
National Wetland Inventory Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area

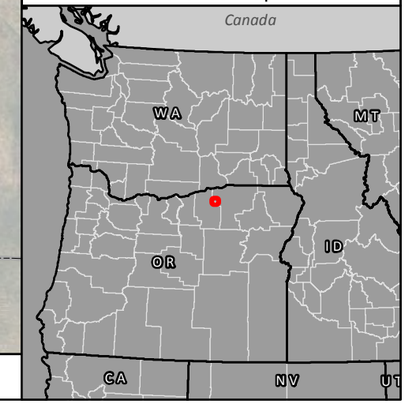
County Boundary

NHD Waterbodies

Intermittent Stream/River

TETRA TECH

Reference Map



Umatilla County

Morrow County

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 3.2
National Wetland Inventory Detail Map

MORROW AND UMATILLA COUNTIES, OR

Little Juniper Ln

Bombing Range Rd

207

Sand Hollow Rd

- Study Area
- Secondary Road
- County Boundary

NHD Waterbodies

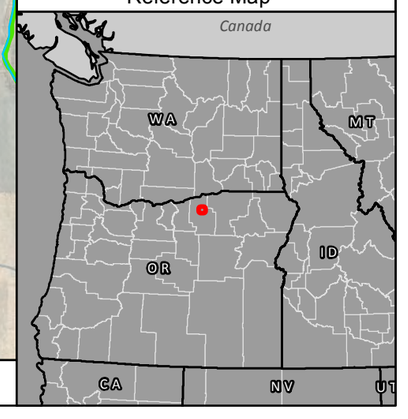
- Perennial Stream/River
- Intermittent Stream/River

NWI Waterbodies

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4
Soils Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 4.1

Figure 4.2

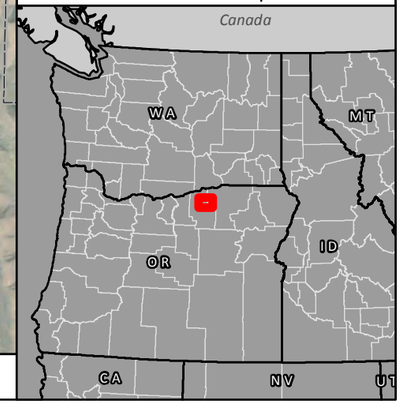
Umatilla County
Morrow County

Bombing Range Rd
Juniper Rd
Little Juniper Ln
Sand Hollow Rd
Butter Creek Rd
Big Butter Creek Ln
578
Baseline Rd
Sandhollow Rd
Pine City Rd

- Study Area
- Figure 4 Map Grid
- Secondary Road
- County Boundary

TETRA TECH

Reference Map



1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

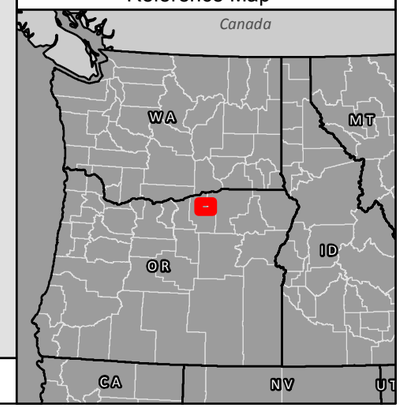
NEXTera ENERGY RESOURCES

Figure 4
Soils Map Legend

MORROW AND UMATILLA COUNTIES, OR

Map Symbol: Map Unit Name
13E: Gravden very gravelly loam, 20 to 40 percent slopes
15B: Burke silt loam, 1 to 7 percent slopes
15C: Burke silt loam, 7 to 12 percent slopes
28E: Lickskillet very stony loam, 7 to 40 percent slopes
43A: Kimberly silt loam, 0 to 3 percent slopes
45A: Ritzville silt loam, 0 to 2 percent slopes
45B: Ritzville silt loam, 2 to 7 percent slopes
45C: Ritzville silt loam, 7 to 12 percent slopes
47E: Ritzville silt loam, 20 to 40 percent south slopes
48E: Lickskillet very stony loam, 7 to 40 percent slopes
71B: Warden silt loam, 2 to 5 percent slopes
75B: Willis silt loam, 2 to 5 percent slopes
75C: Willis silt loam, 5 to 12 percent slopes
78: Xeric Torriorthents, nearly level
80B: Ritzville silt loam, 2 to 7 percent slopes
89B: Shano silt loam, 2 to 7 percent slopes

Reference Map



1:120,000 WGS 1984 UTM Zone 10N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4.1
Soils Detail Map

MORROW AND UMATILLA COUNTIES, OR

Study Area

County Boundary

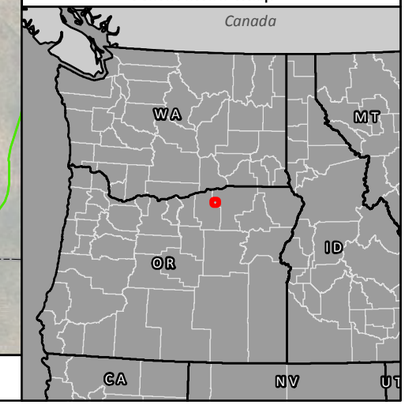
Hydric Rating

Nonhydric

Partially Hydric

TETRA TECH

Reference Map



Umatilla County

Morrow County

1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 4.2
Soils Detail Map

MORROW AND UMATILLA COUNTIES, OR

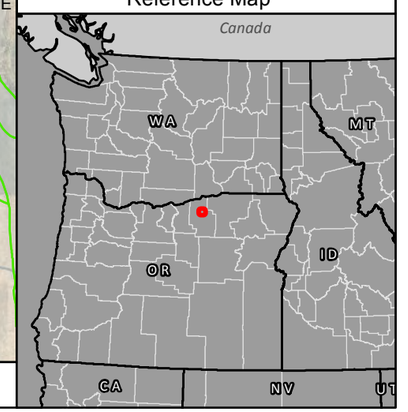
- Study Area
- Secondary Road
- County Boundary

Hydric Rating

- Nonhydric

TETRA TECH

Reference Map



1:24,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Meters

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5
Waters Delineation Map Index Map

MORROW AND UMATILLA COUNTIES, OR

Study Area
Map Grid
Secondary Road
County Boundary

TETRA TECH

Reference Map

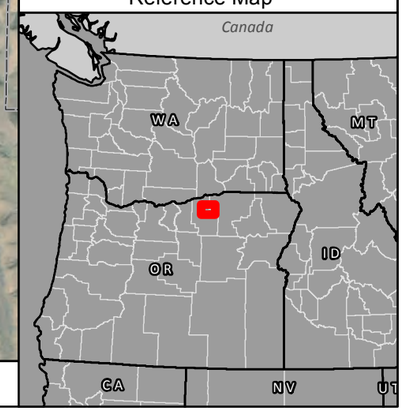

Figure 5.1
Figure 5.2
Figure 5.3

Bombing Range Rd
Juniper Rd
Little Juniper Ln
Butter Creek Rd
Umatilla County
Morrow County
Sand Hollow Rd
207
578
Baseline Rd
Big Butter Creek Ln
Pine City Rd
Sandhollow Rd

1:100,000 WGS 1984 UTM Zone 11N

0 0.5 1 2 3 4 Miles

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1
Waters Delineation Map
Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.1

Figure 5.1.2

Figure 5.1.3

Figure 5.1.4

Study Area

Map Grid

County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.2
Waters Delineation Map Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.4

Figure 5.1.5

Figure 5.1.6

Figure 5.1.7

Figure 5.1.8

Figure 5.1.9

Figure 5.1.10

Study Area

Map Grid

County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.3
Waters Delineation Map Index Map

MORROW AND UMATILLA COUNTIES, OR

Figure 5.1.11

Figure 5.1.12

Figure 5.1.13

Study Area

Map Grid

County Boundary

TETRA TECH

Reference Map

OR

1:12,000 WGS 1984 UTM Zone 11N

0 250 500 1,000 1,500 2,000 Feet

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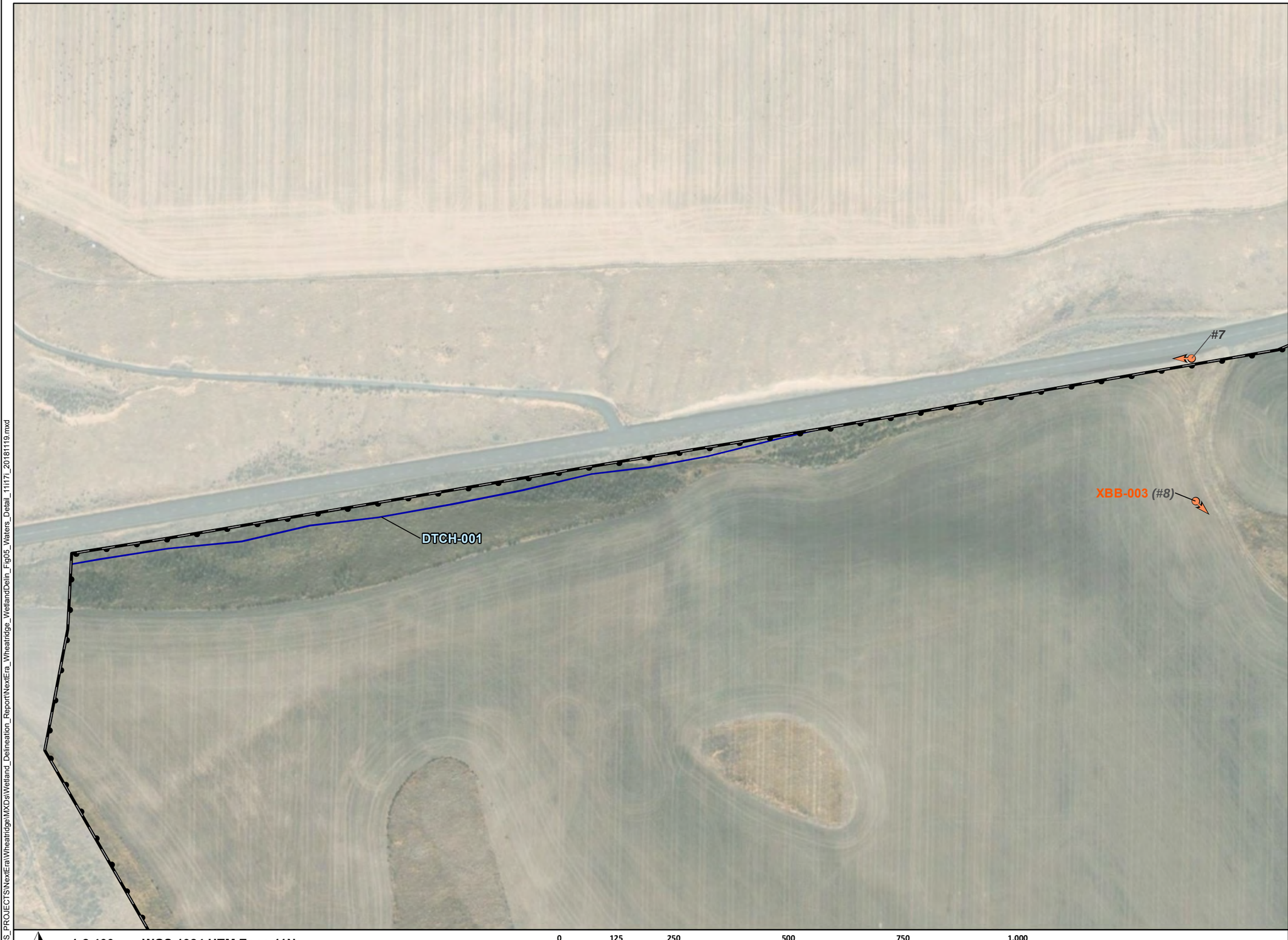
Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.1
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

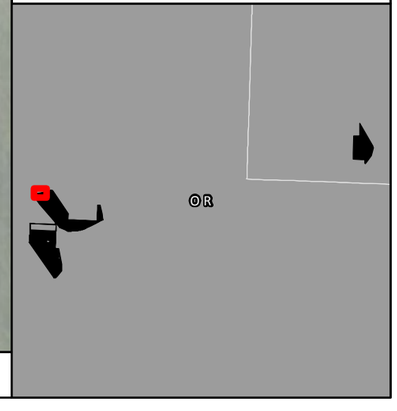


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.2
Waters Delineation Map
Detail Map

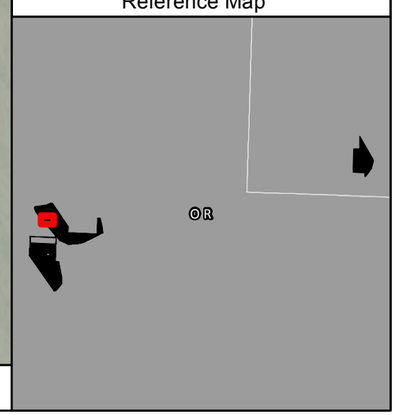
MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.3
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-010 *(#17)*

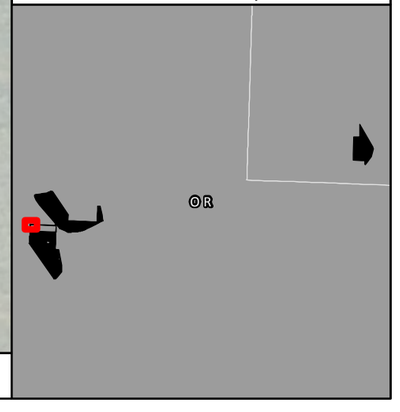
XBB-102 *(#31)*

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.4
Waters Delineation Map
Detail Map

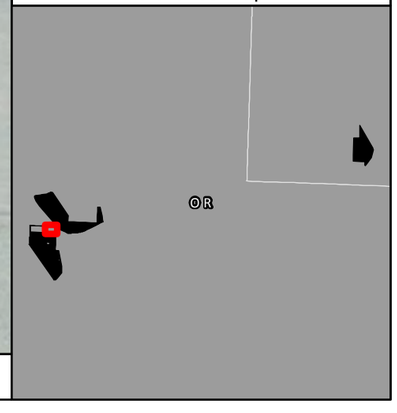
MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.5
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-007 *(#14)*

XBB-009 *(#16)*

XBB-103 *(#32)*

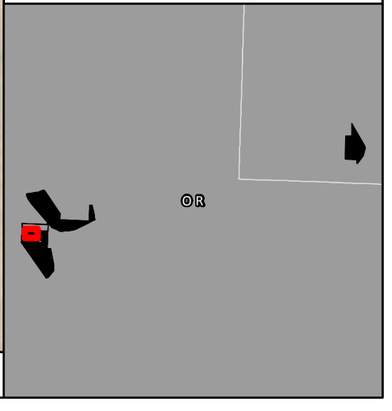
XBB-008 *(#15)*

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

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Figure 5.1.6
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

#25

EPH-007

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map

OR

1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.7
Waters Delineation Map
Detail Map

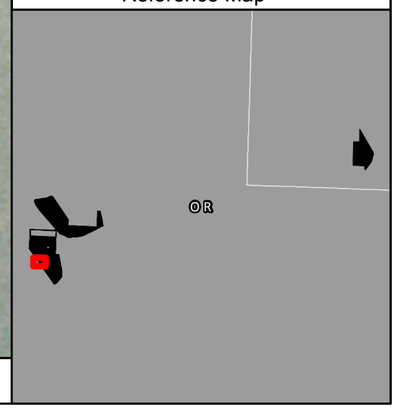
MORROW AND UMATILLA COUNTIES, OR

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.8
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

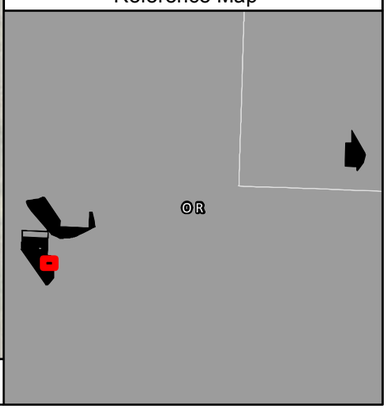
EPH-007

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.9
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-012 *(#22)*

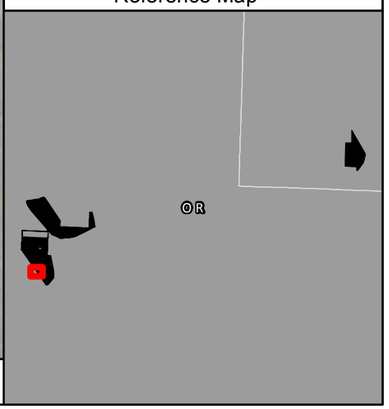
XBB-013 *(#23)*

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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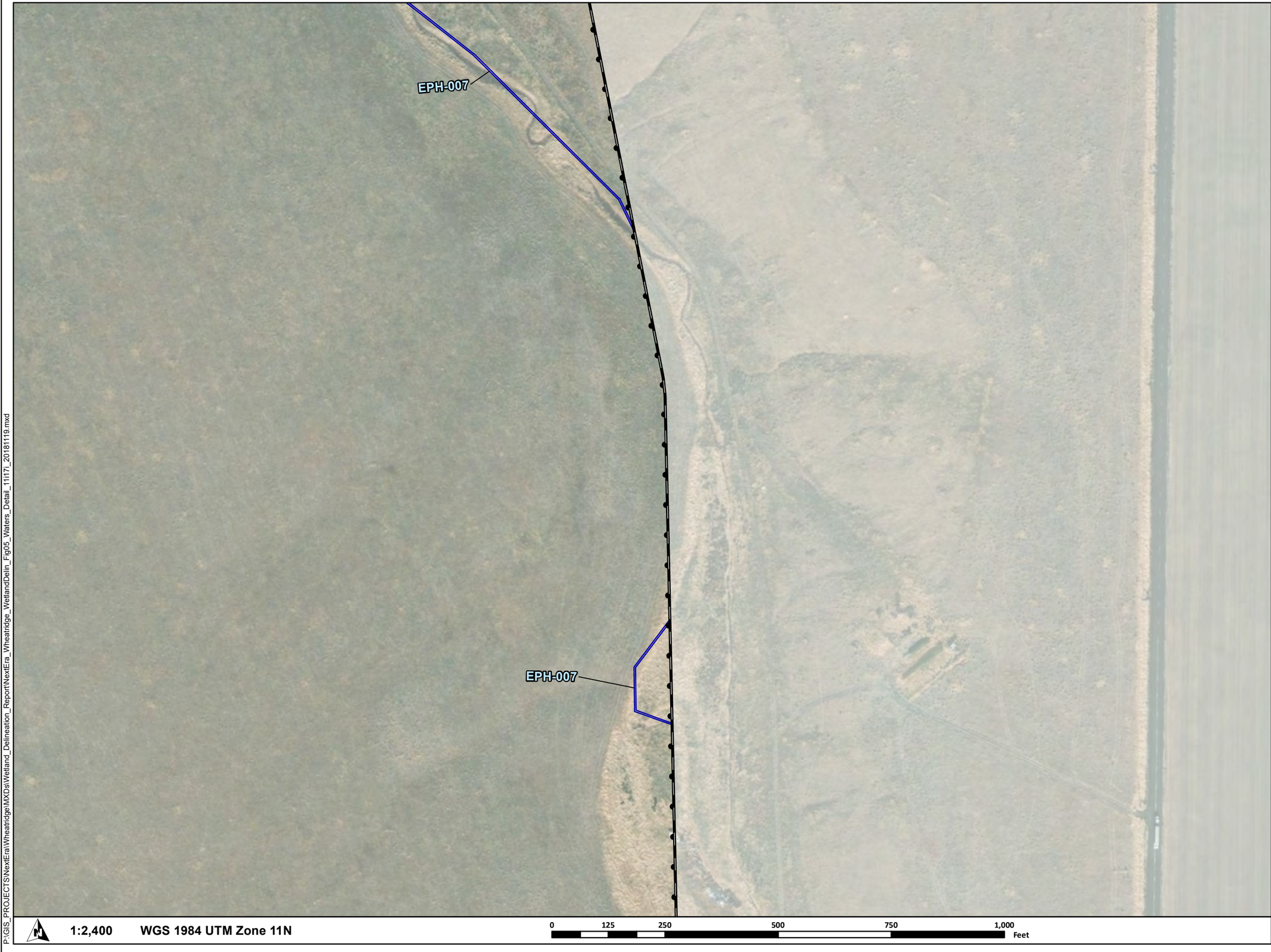
Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.10
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

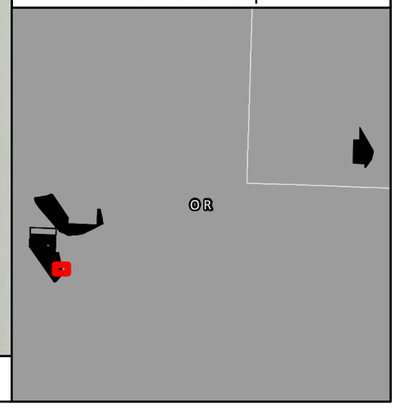


- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.11
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

XBB-002 (#2)

#3

EPH-001

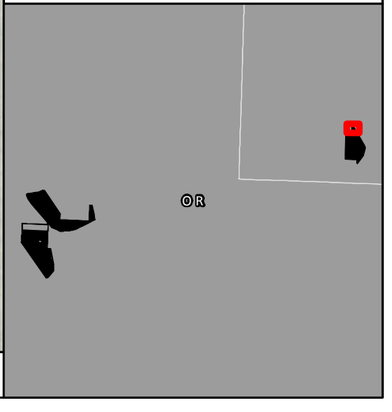
- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

EPH-001 is completely contained within the Study *

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.12
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

EPH-001

EPH-002

#4

EPH-003

#6

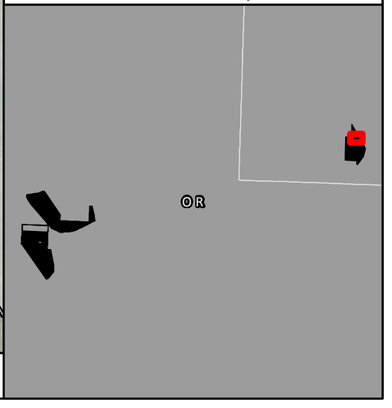
- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

EPH-001 is completely contained within the Study *

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Wheatridge Energy Project

NEXTera ENERGY RESOURCES

Figure 5.1.13
Waters Delineation Map
Detail Map

MORROW AND UMATILLA COUNTIES, OR

EPH-003

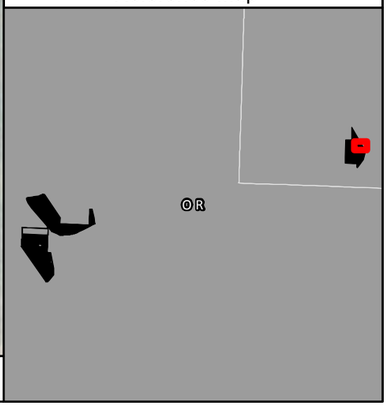
#6

- Study Area
- Surveyed Water (Maximum OHWL Width)
- Culvert
- Photo Point (# Photo Number)

*All Waters continue outside the Study Area unless otherwise noted in the legend

TETRA TECH

Reference Map



1:2,400 WGS 1984 UTM Zone 11N

0 125 250 500 750 1,000 Feet

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Appendix B. Tables

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Table B-1. Delineated Waters

Feature Name	Map Number	Latitude	Longitude	Flow Duration	Flow Direction	OHWL Width (feet)	OHWL Height (feet)	Photo Number	Additional Notes
EPH-001	Figure 5.1.11,12	45.635811	-119.334801	Ephemeral	N	2	< 1	3	Channel is single thread. Flow direction is north. Feature flows in and out of study area. Riparian vegetation absent. Grazed, Mowed. Herbicided: Historic
EPH-002	Figure 5.1.12	45.631886	-119.331253	Ephemeral	SW	2	< 1	4	Channel is single thread. Flow direction is southwest. Feature flows into study area. Riparian vegetation absent. OHWL field indicators: textural change of depositional sediment or soil. Grazed, Mowed. Herbicided: Historic
EPH-003	Figure 5.1.12,13	45.627934	-119.328018	Ephemeral	SE	1	< 1	6, 8	Channel is single thread. Flow direction is southeast. Feature originates within study area. Riparian vegetation absent. OHWL field indicators: textural change of depositional sediment or soil. Grazed, Mowed. Herbicided.
DTCH-001	Figure 5.1.1	45.590763	-119.613892	Ephemeral	SW	1	< 1	7	Channel is single thread. Flow direction is southwest. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: change in vegetation.
EPH-004	Figure 5.1.2	45.581867	-119.613754	Ephemeral	SE	3	< 1	9, 10	Channel is single thread. Flow direction is southeast. Feature flows in and out of study area. Riparian vegetation absent. Modified stream. Drainage ditch. Plowed and Planted: Historic.
EPH-005	Figure 5.1.7	45.553196	-119.615303	Ephemeral	SE	6	< 1	18	Channel is single thread. Flow direction is southeast. Feature originates within study area. Riparian vegetation absent. Modified stream. Plowed and planted: Historic.
EPH-007	Figure 5.1.6,8,10	45.551094	-119.598915	Ephemeral	SE	3.5	< 1	25	Channel is single thread. Flow direction is southeast. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: clear, natural line impressed on the bank. Modified stream. Plowed and planted: Historic. Similar to other waterways in this area where far.
EPH-008	Figure 5.1.4	45.569305	-119.601128	Ephemeral	S	1	< 1	27, 28, 33, 35	Channel is single thread. Flow direction is south. Feature flows in and out of study area. Riparian vegetation absent. OHWL field indicators: slope angle break in bank. Modified stream. Plowed and planted: Historic.

Table B-2. Other Features

Feature Name	Map Number	Lat	Long	Photograph Number	Feature Characteristics
XBB-002	Figure 5.1.11	45.638020	-119.335327	2	Obligate upland shrubs, no bed or banks
XBB-003	Figure 5.1.1	45.590218	-119.611412	8	Farmed, currently wheat stubble with no signs of water flow
XBB-004	Figure 5.1.2	45.582569	-119.610741	11	Farmed, currently wheat stubble with no signs of water flow
XBB-005	Figure 5.1.2	45.581985	-119.605087	12	Farmed, currently wheat stubble with no signs of water flow
XBB-006	Figure 5.1.2	45.583069	-119.613640	13	Obligate upland species, previously tilled
XBB-007	Figure 5.1.5	45.566551	-119.620102	14	Farmed, currently chem fallow stubble with no signs of water flow
XBB-008	Figure 5.1.5	45.563469	-119.617981	15	Previously tilled ground, no bed or banks in replanted grasslands
XBB-009	Figure 5.1.5	45.566776	-119.611107	16	Farmed, currently wheat stubble with no signs of water flow
XBB-010	Figure 5.1.3	45.571247	-119.623291	17	Farmed, currently chem fallow stubble with no signs of water flow
XBB-011	Figure 5.1.7	45.549599	-119.613586	21	Previously tilled ground, no bed or banks in replanted grasslands
XBB-012	Figure 5.1.9	45.546158	-119.609955	22	Previously tilled ground, no bed or banks in replanted grasslands
XBB-013	Figure 5.1.9	45.545952	-119.608681	23	Previously tilled ground, no bed or banks in replanted grasslands
XBB-100	Figure 5.1.4	45.570850	-119.607887	29	Farmed, recently seeded ground with no signs of water flow
XBB-101	Figure 5.1.4	45.570900	-119.610580	30	Previously tilled ground, no bed or banks in replanted grasslands
XBB-102	Figure 5.1.3	45.570641	-119.624611	31	Farmed, currently wheat stubble with no signs of water flow
XBB-103	Figure 5.1.5	45.564850	-119.618904	32	Farmed, recently seeded ground with no signs of water flow

Table B-3. Township, Range, Section within the Project Study Area

Township	Range	Section
001N	025E	013
001N	025E	024
001N	026E	006
001N	026E	007
001N	026E	008
001N	026E	010
001N	026E	009
001N	026E	017
001N	026E	018
001N	026E	016
001N	026E	020
001N	026E	019
001N	026E	029
001N	026E	030
002N	028E	020
002N	028E	021
002N	028E	028
002N	028E	029
002N	028E	033

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Appendix C. Photolog

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Photo 2. Feature XBB-002. No stream on NHD line, obligate upland plants throughout. Looking North. 8/22/2018. Lat/Long: 45.638020/-119.335327.

Photo 3. Feature EPH-001. No macroinvertebrates or wetland plants observed in channel. Looking South. 8/22/2018. Lat/Long: 45.636452/-119.335373.

Photo 4. Feature EPH-002. No macroinvertebrates or wetland plants observed in channel. Obligate upland plants throughout. Looking Northeast. 8/22/2018. Lat/Long: 45.631897/-119.331680.

Photo 6. Feature EPH-003. No macroinvertebrates or wetland plants observed in channel. Obligate upland plants throughout. Looking Southeast. 8/22/2018. Lat/Long: 45.628952/-119.329048.

Photo 7. Feature DTCH-001. Roadside drainage ditch, no water present at time of survey. Does not connect to any Waters of the State or Waters of the United States. Looking West. 8/22/2018. Lat/Long: 45.591070/-119.611500.

Photo 8. Feature XBB-003. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southeast. 8/22/2018. Lat/Long: 45.590218/-119.611412.

Photo 9. Feature EPH-004. No macroinvertebrates or wetland plants observed in length of channel. The larger obligate upland shrubs (rabbitbrush and Big Basin sagebrush) appear to have stress induced senescence, possibly caused by water flowing at some point. Looking Southeast. 8/22/2018. Lat/Long: 45.582001/-119.614128.

Photo 10. Feature EPH-004. No macroinvertebrates or wetland plants observed in channel. Looking Northwest. 8/22/2018. Lat/Long: 45.581451/-119.613319.

Photo 11. Feature XBB-004. No stream on NHD line, obligate upland plants throughout. Area has been disturbed by tillage and subsequent weed growth and control methods. Looking Northeast. 8/22/2018. Lat/Long: 45.582569/-119.610741.

Photo 12. Feature XBB-005. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southeast. 8/22/2018. Lat/Long: 45.581985/-119.605087.

Photo 13. Feature XBB-006. No stream on NHD line, obligate upland plants throughout. Looking Southwest.8/22/2018. Lat/Long: 45.583069/-119.613640.

Photo 14. Feature XBB-007. No stream on NHD line, obligate upland plants throughout. Looking Southeast.8/22/2018. Lat/Long: 45.566551/-119.620102.

Photo 15. Feature XBB-008. No stream on NHD line, obligate upland plants throughout. Looking Southeast. 8/22/2018. Lat/Long: 45.563469/-119.617981.

Photo 16. Feature XBB-009. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking South. 8/22/2018. Lat/Long: 45.566776/-119.611107.

Photo 17. Feature XBB-010. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Northeast. 8/22/2018. Lat/Long: 45.571247/-119.623291.

Photo 18. Feature EPH-005. No macroinvertebrates or wetland plants observed in the length of the channel. Looking North. 8/23/2018. Lat/Long: 45.552505/-119.614799.

Photo 20. Feature Culvert. Culvert drains into basin with no visible outlet. No wetland indicators present. Looking Northwest. 8/23/2018. Lat/Long: 45.550053/-119.614090.

Photo 21. Feature XBB-011. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking Southeast. 8/23/2018. Lat/Long: 45.549599/-119.613586.

Photo 22. Feature XBB-012. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking East. 8/23/2018. Lat/Long: 45.546158/-119.609955.

Photo 23. Feature XBB-013. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking Southeast. 8/23/2018. Lat/Long: 45.545952/-119.608681.

Photo 25. Feature EPH-007. No macroinvertebrates or wetland plants observed in the length of the channel. Upland obligate plants throughout. Looking East. 8/23/2018. Lat/Long: 45.556194/-119.599762.

Photo 27. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Looking North. 11/9/2018. Lat/Long: 45.571579/-119.603867.

Photo 28. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Looking South. 11/9/2018. Lat/Long: 45.571751/-119.603928.

Photo 29. Feature XBB-100. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking North. 11/9/2018. Lat/Long: 45.570850/-119.607887.

Photo 30. Feature XBB-101. No stream on NHD line, land was previously farmed and appears to have been seeded with introduced/native grassmix. Looking North. 11/9/2018. Lat/Long: 45.570900/-119.610580.

Photo 31. Feature XBB-102. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Southwest. 11/9/2018. Lat/Long: 45.570641/-119.624611.

Photo 32. Feature XBB-103. No stream on NHD line, any drainage that may have been here historically has been plowed through. Looking Northwest. 11/9/2018. Lat/Long: 45.564850/-119.618904.

Photo 33. Feature EPH-008. No macroinvertebrates or wetland plants observed in channel. Channel has natural sinuousity in two sections, appears to have been straightened to make room for farm road at southern end of the project boundary. Looking North. 11/9/2018. Lat/Long: 45.566666/-119.600792.

Photo 34. Feature Culvert. Culvert drains into dry streambed, no water present. No macroinvertebrates or wetland indicators present. Looking West. 11/9/2018. Lat/Long: 45.569298/-119.600975.

Photo 35. Feature EPH-008. Straightened drainage, no macroinvertebrates or wetland indicators observed. Looking West. 11/9/2018. Lat/Long: 45.569321/-119.601303.

Exhibit K

Land Use

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit K will be completed as part of a supplemental submittal.

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Exhibit L

Protected Areas

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ASC	Application for Site Certificate
BLM	Bureau of Land Management
BMP	Best Management Practices
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
dBA	A-weighted decibels
Facility	Wheatridge Wind Energy Facility
GIS	Geographic Information System
MW	Megawatt
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
RFA 4	Request for Amendment 4
RNA	Research Natural Area
ZVI	zone of visual influence

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit L provides an analysis of the Facility impacts to protected areas, as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010 (1)(l) paragraphs (A) through (C). Exhibit L demonstrates that the Facility, as modified by RFA 4, can continue to comply with the approval standard in OAR 345-022-0040:

OAR 345-022-0040 Protected Areas

(1) Except as provided in sections (2) and (3), the Council shall not issue a site certificate for a proposed facility located in the areas listed below. To issue a site certificate for a proposed facility located outside the areas listed below, the Council must find that, taking into account mitigation, the design, construction and operation of the facility are not likely to result in significant adverse impact to the areas listed below. References in this rule to protected areas designated under federal or state statutes or regulations are to the designations in effect as of May 11, 2007:

(a) National parks, including but not limited to Crater Lake National Park and Fort Clatsop National Memorial;

(b) National monuments, including but not limited to John Day Fossil Bed National Monument, Newberry National Volcanic Monument and Oregon Caves National Monument;

(c) Wilderness areas established pursuant to The Wilderness Act, 16 U.S.C. 1131 et seq. and areas recommended for designation as wilderness areas pursuant to 43 U.S.C. 1782;

(d) National and state wildlife refuges, including but not limited to Ankeny, Bandon Marsh, Baskett Slough, Bear Valley, Cape Meares, Cold Springs, Deer Flat, Hart Mountain, Julia Butler Hansen, Klamath Forest, Lewis and Clark, Lower Klamath, Malheur, McKay Creek, Oregon Islands, Sheldon, Three Arch Rocks, Umatilla, Upper Klamath, and William L. Finley;

(e) National coordination areas, including but not limited to Government Island, Ochoco and Summer Lake;

(f) National and state fish hatcheries, including but not limited to Eagle Creek and Warm Springs;

(g) National recreation and scenic areas, including but not limited to Oregon Dunes National Recreation Area, Hell's Canyon National Recreation Area, and the Oregon Cascades Recreation Area, and Columbia River Gorge National Scenic Area;

(h) State parks and waysides as listed by the Oregon Department of Parks and Recreation and the Willamette River Greenway;

(i) State natural heritage areas listed in the Oregon Register of Natural Heritage Areas pursuant to ORS 273.581;

(j) State estuarine sanctuaries, including but not limited to South Slough Estuarine Sanctuary, OAR chapter 142;

(k) Scenic waterways designated pursuant to ORS 390.826, wild or scenic rivers designated pursuant to 16 U.S.C. 1271 et seq., and those waterways and rivers listed as potentials for designation;

(l) Experimental areas established by the Rangeland Resources Program, College of Agriculture, Oregon State University: the Prineville site, the Burns (Squaw Butte) site, the Starkey site and the Union site;

(m) Agricultural experimental stations established by the College of Agriculture, Oregon State University, including but not limited to:

…

Agriculture Research and Extension Center, Hermiston…;

(n) Research forests established by the College of Forestry, Oregon State University, including but not limited to McDonald Forest, Paul M. Dunn Forest, the Blodgett Tract in Columbia County, the Spaulding Tract in the Mary's Peak area and the Marchel Tract;

(o) Bureau of Land Management areas of critical environmental concern, outstanding natural areas and research natural areas;

(p) State wildlife areas and management areas identified in OAR chapter 635, division 8.

2.0 Protected Areas Inventory – OAR 345-021-0010(1)(l)(A)(B)

OAR 345-021-0010(1)(l) Information about the proposed facility's impact on protected areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:

OAR 3450-021-0010(1)(l)(A) A list of the protected areas within the analysis area showing the distance and direction from the proposed facility and the basis for protection by reference to a specific subsection under OAR 345-022-0040(1).

OAR 3450-021-0010(1)(l)(B) A map showing the location of the proposed facility in relation to the protected areas listed in OAR 345-022-0040 located within the analysis area.

The Analysis Area for protected areas is defined in the Project Order as "the area within the Site Boundary and 20 miles from the Site Boundary." The Site Boundary is defined in detail in Exhibits B and C and includes the Approved and Amended Site Boundary. The Analysis Area is shown on Figure L-1. The areas of Amended Site Boundary, because of their proximity to the Approved Site Boundary, do not change the extent of the Analysis Area for Exhibit L. No new protected areas are located within the Analysis Area since the Application for Site Certificate (ASC; Wheatridge 2015). Table L-1 provides an inventory of the 16 protected areas within the Analysis Area and indicates the proximity and direction of each protected area relative to the Site Boundary. The inventory of protected areas was based on review of best available Geographic Information System (GIS) data, maps, and the most current information for the categories of protected areas listed in OAR 345-022-0040(1). These protected areas are identified by name on Figure L-1.

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Table L-1. Protected Areas Inventory, Visual and Noise Assessment Results

Protected Areas within 20 Miles of Site Boundary		Distance to Site Boundary	Direction from Facility	Facility Potentially Visible? [1]	Visual Analysis Results	Operational Noise Potentially Audible?	Worst-case Modeled Operational Noise Level (dBA L_{50})
Type	**Area Name**						
National Parks OAR 345-022-0040(1)(a)	None	N/A	N/A	N/A	N/A	N/A	N/A
National Monuments OAR 345-022-0040(1)(b)	None	N/A	N/A	N/A	N/A	N/A	N/A
Wilderness Areas OAR 345-022-0040(1)(c)	None	N/A	N/A	N/A	N/A	N/A	N/A
National & State Wildlife Refuges OAR 345-022-0040(1)(d)	Umatilla National Wildlife Refuge	14/17.3	NNW	Yes (wind turbines and solar arrays)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates potential visibility of solar panels from some refuge locations on the Washington side of the Columbia River. At a far background viewing distance of over 17 miles, it is highly unlikely that solar arrays with a maximum height of 16 feet could be detected or identified by viewers. If any solar facilities were visible, the additional visual contrast within an existing modified landscape would be negligible. No management direction applicable to preservation of scenic qualities outside of Refuge. Addition of the solar arrays would not change the previous conclusion that views of the Facility, if any, would not compromise the purpose of the Refuge.	No	Background (no increase from approved wind facility)
	Cold Springs National Wildlife Refuge	12.5/26.1	NE	Yes (wind turbines and solar arrays)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates no visibility of solar facilities within the NWR. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of the Refuge.	No	Background (no increase from approved wind facility)
	McNary National Wildlife Refuge	18/31.5	NE	Yes (wind turbines and solar arrays)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates potential visibility of solar panels from a small area along the southern edge of the refuge. At a far background viewing distance of over 31 miles, it is inconceivable that solar arrays with a maximum height of 16 feet could be detected or identified by viewers. No management direction applicable to preservation of scenic qualities outside of Refuge. Addition of the solar arrays would not change the previous conclusion that views of the Facility, if any, would not compromise the purpose of the Refuge.	No	Background (no increase from approved wind facility)
National Coordination Areas OAR 345-022-0040(1)(e)	None	N/A	N/A	N/A	N/A	N/A	N/A
Fish Hatcheries OAR 345-022-0040(1)(f)	Umatilla Hatchery	20.1/22.7	N	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates no visibility of solar facilities at the hatchery location. No management direction applicable to scenic quality. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of facility.	No	Background (no increase from approved wind facility)

Protected Areas within 20 Miles of Site Boundary		Distance to Site Boundary	Direction from Facility	Facility Potentially Visible? [1]	Visual Analysis Results	Operational Noise Potentially Audible?	Worst-case Modeled Operational Noise Level (dBA L_{50})
Type	**Area Name**						
	Irrigon Hatchery	18.1/21.9	N	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates no visibility of solar facilities at the hatchery location. No management direction applicable to scenic quality. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of facility.	No	Background (no increase from approved wind facility)
	Three Mile Adult Hold Fish Hatchery	13.9/23.6	N	Yes (wind turbines only)	No new impact. Viewshed analysis indicates no visibility of solar facilities at the holding facility location. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. No management direction applicable to scenic quality. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of facility.	No	Background (no increase from approved wind facility)
National Recreation and Scenic Areas OAR 345-022-0040(1)(g)	None	N/A	N/A	N/A	N/A	N/A	N/A
State Parks & Waysides OAR 345-022-0040(1)(h)	Hat Rock State Park	16.5/29.4	NE	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible at a far background distance from high ground in the park. Viewshed analysis indicates no visibility of solar facilities at the park location. Addition of the solar arrays would not change the previous conclusion that visual impact from the Facility on Hat Rock State Park would be negligible.	No	Background (no increase from approved wind facility)
State Natural Heritage Areas OAR 345-022-0040(1)(i)	Lindsay Prairie Preserve	0.1/1.4	W	Yes (wind turbines and solar arrays)	Negligible new impact. Wind turbines from the approved facility were previously identified as visible in the foreground from this area. Viewshed analysis indicates potential visibility of solar panels in a small area in the northeastern part of the preserve. At a middleground viewing distance of 1.4 mile, it is unlikely that solar arrays with a maximum height of 16 feet would be noticed by viewers. If any solar facilities were visible, the additional visual contrast within an existing modified landscape would be negligible. The Preserve is fenced, gated and locked and has no developed facilities; although it is publicly accessible, it receives very little public use.[2] The site is protected for preservation of native vegetation and wildlife, and there is no management direction related to scenic quality except as related to vegetation within the site. The addition of solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of the Preserve.	Yes	54 (no increase from approved wind facility)
State Estuarine Sanctuaries OAR 345-022-0040(1)(j)	None	N/A	N/A	N/A	N/A	N/A	N/A
Scenic Waterways/ Wild & Scenic Rivers OAR 345-022-0040(1)(k)	None	N/A	N/A	N/A	N/A	N/A	N/A

Protected Areas within 20 Miles of Site Boundary		Distance to Site Boundary	Direction from Facility	Facility Potentially Visible? [1]	Visual Analysis Results	Operational Noise Potentially Audible?	Worst-case Modeled Operational Noise Level (dBA L_{50})
Type	**Area Name**						
Experimental Areas (Rangeland Resources Program) OAR 345-022-0040(1)(l)	None	N/A	N/A	N/A	N/A	N/A	N/A
Agricultural Experimental Stations OAR 345-022-0040(1)(m)	Oregon State University Agriculture Research and Extension Center, Hermiston	9.2/20.9	N	Yes (wind turbines and solar arrays)	No new Impact. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. Viewshed analysis indicates no visibility of solar facilities at the extension center location. No management direction applicable to scenic quality. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of facility.	No	Background (no increase from approved wind facility)
Research Forests OAR 345-022-0040(1)(n)	None	N/A	N/A	N/A	N/A	N/A	N/A
Bureau of Land Management (BLM) Areas of Critical Environmental Concern OAR 345-022-0040(1)(o)	Oregon Trail ACEC, Echo Meadows	2.5/15.4	N	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the middleground to background from this area. Viewshed analysis indicates no visibility of solar facilities at the ACEC location. The Echo Meadows site receives low levels of public use, up to a maximum of about 850 visitors per year.[3] No management direction applicable to preservation of scenic qualities outside of ACEC. Addition of the solar arrays would not change the previous conclusion that views of the Facility would not compromise the integrity of the remaining evidence of the Oregon Trail at this site.	No	Background (no increase from approved wind facility)
	Horn Butte Curlew ACEC	15.5/18.9	NW	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the far background from this area. No management direction applicable to preservation of scenic qualities outside of ACEC. Viewshed analysis indicates no visibility of solar facilities at the ACEC locations. Addition of solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of the ACEC.	No	Background (no increase from approved wind facility)
BLM Research Natural Areas and Outstanding Natural Areas OAR 345-022-0040(1)(o)	Boardman RNA	2.2/5.9	NNW	Yes (wind turbines and solar arrays)	Negligible new impact. Wind turbines from the approved facility were previously identified as potentially visible in the middleground to background from this area. Viewshed analysis indicates potential visibility of solar facilities in certain portions of the RNA. At a background viewing distance of 5.9 miles, it is unlikely that solar arrays with a maximum height of 16 feet could be detected or identified by viewers. If any solar facilities were visible, the additional visual contrast within an existing modified landscape would be minimal. The RNA is located within the Boardman Bombing Range and not accessible to the public, with occasional visits by TNC staff for monitoring and maintenance.[2] The site is not managed for its scenic qualities. The addition of solar arrays would not change the previous conclusion that views of the Facility would not compromise the purpose of the RNA.	No	Background (no increase from approved wind facility)

Protected Areas within 20 Miles of Site Boundary		Distance to Site Boundary	Direction from Facility	Facility Potentially Visible? [1]	Visual Analysis Results	Operational Noise Potentially Audible?	Worst-case Modeled Operational Noise Level (dBA L_{50})
Type	**Area Name**						
State Wildlife Areas and Management Areas OAR 345-022-0040(1)(p)	Irrigon Wildlife Area	16.5/21.9	N	Yes (wind turbines and solar arrays)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the far background from this area. Viewshed analysis indicates no visibility of solar facilities from this area. No management direction applicable to scenic quality. The addition of solar arrays would not alter the previous conclusion that views of the Facility would not interfere with wildlife viewing or compromise the purpose of the WMA.	No	Background (no increase from approved wind facility)
	Power City Wildlife Area	14.6/24.9	N	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the far background from this area. Viewshed analysis indicates no visibility of solar facilities from this area. No management direction applicable to scenic quality. The addition of solar arrays would not alter the previous conclusion that views of the Facility would not interfere with wildlife viewing or compromise the purpose of the WMA.	No	Background (no increase from approved wind facility)
	Coyote Springs Wildlife Area	14/16.8	N	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the far background from this area. Viewshed analysis indicates no visibility of solar facilities from this area. No management direction applicable to scenic quality. The addition of solar arrays would not alter the previous conclusion that views of the Facility would not interfere with wildlife viewing or compromise the purpose of the WMA.	No	Background (no increase from approved wind facility)
	Willow Creek Wildlife Area	18.1/22.1	NW	Yes (wind turbines only)	No new impact. Wind turbines from the approved facility were previously identified as potentially visible in the far background from this area. Viewshed analysis indicates no visibility of solar facilities from this area. No management direction applicable to scenic quality. The addition of solar arrays would not alter the previous conclusion that views of the Facility would not interfere with wildlife viewing or compromise the purpose of the WMA	No	Background (no increase from approved wind facility)

1. Indicates potential visibility of any part of solar panels, Intraconnection Lines, or other Facility components as determined through viewshed analysis.
2. Information on access and use obtained through a personal communication between Thomas Kruger, Tetra Tech and Jeff Rosier, The Nature Conservancy, March 9, 2015.
3. Use data for the Oregon Trail Echo Meadows ACEC obtained through a personal communication between Rachael Katz, Tetra Tech, and Brian Woolf, BLM Vale District, Baker Office, August 6, 2018.

3.0 Potential Impacts – OAR 345-021-0010(1)(l)(C)

OAR 3450-021-0010(1)(l)(C) A description of significant potential impacts of the proposed facility, if any, on the protected areas including, but not limited to, potential impacts such as:

3.1 Noise Impacts – OAR 345-021-0010(1)(l)(C)(i)

(i) Noise resulting from facility construction or operation;

Table L-1 provides a summary of operational noise levels from the solar facilities at protected areas within the Analysis Area. As previously found by the Council, noise generated by the construction and operation phases of the Facility is unlikely to cause significant adverse noise impacts to protected areas (ODOE 2017). Exhibit X provides an assessment of the existing acoustical environment and anticipated Facility sound levels, the methodology for noise modeling is discussed in detail in that exhibit. There would be no significant operational noise from the solar panels themselves. However, cooling equipment associated with the distributed energy storage modules described in Exhibit B, along with associated electrical equipment, would have some limited operational noise. Construction activities associated with construction of the solar arrays and related or supporting facilities would be similar to or less than construction noise already reviewed by Council for the Facility.

Based on the results of modeling, as described in detail in Exhibit X, operation of the solar arrays and related or supporting facilities would not create new noise impacts to protected areas beyond those that were previously identified for the Facility. Operational noise would attenuate to be indistinguishable from the background noise level within a distance of approximately 2 miles from the Site Boundary. All protected areas except for one, the Lindsay Prairie Preserve, are located more than 2 miles from the Site Boundary, where noise from the Facility would be effectively inaudible.

At Lindsay Prairie Preserve, the worst-case modeled noise level would be approximately 36 to 54 A-weighted decibels (dBA); at the loudest, this is approximately equivalent to the sound level of a normal conversation. Operational Facility noise at Lindsay Prairie Preserve would be only marginally lower (1 dBA). This is the same noise level as previously modeled for the approved wind facility.

Exhibit X describes sound level thresholds derived from the Oregon Department of Environmental Quality (ODEQ) noise regulations (OAR 340-035-0035), which are used to assess the significance of impacts to noise sensitive properties. As defined in the ODEQ regulations, "Noise sensitive property" is defined as "real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner." As previously described for the approved wind facility, the closest protected area, the Lindsay Prairie Preserve, is not an area normally used for sleeping (which is also true of all of the other protected

areas) and has minimal daytime use, so is not considered noise sensitive property. Therefore, the ODEQ noise regulations do not apply.

The Council previously found in the Final Order on the ASC (ODOE 2017) that the Lindsay Prairie Preserve is a site protected for restoration and preservation of native vegetation and wildlife, and receives no known public use. The protected area is fenced, and the access road is gated and locked. The Council found that noise levels resulting from turbine operations, although audible, would not be expected to interfere with the primary purpose (native grassland and wildlife habitat preservation) of the Lindsay Prairie Preserve and therefore the protected area would not experience significant adverse noise impacts from facility operation. Because of the low elevation of noise-emitting components of the solar arrays and because of their distance from the Lindsay Prairie Preserve, operation of the solar arrays would not have a significant increase on noise levels at the Preserve beyond what was previously evaluated for the approved Facility.

3.2 Traffic Impacts – OAR 3450-021-0010(1)(l)(C)(ii)

(ii) Increased traffic resulting from facility construction or operation;

Traffic impacts are addressed in greater detail in Exhibit U, which provides additional information on anticipated traffic volumes, peak construction traffic times, potential delays and temporary road closures; mitigation measures that would be implemented by the Certificate Holder and the construction contractor to avoid significant traffic impacts; and required coordination with Oregon Department of Transportation and county road officials for necessary road improvements, road closures, and permits for construction and oversized load movements.

A previously found by the Council, no significant traffic impacts to protected areas are anticipated from construction or operation of the Facility (ODOE 2017). Eleven of the protected areas are located north of I-84 and would be virtually unaffected by Facility traffic, which would be concentrated on a small number of roads south of I-84. No truck traffic associated with the Facility would occur north of I-84, and construction worker traffic would be dispersed on many roads in the area, rather than concentrated on any one road such that access to any protected area north of the interstate could be adversely affected. Of the five protected areas located south of I-84, only the Boardman Research Natural Area (RNA) and Lindsay Prairie Preserve are likely to experience impacts from Facility traffic; the Horn Butte Area of Critical Environmental Concern (ACEC), Willow Creek Wildlife Area and the Oregon Trail ACEC are accessed by routes that would not carry Facility-related truck traffic. Construction worker traffic may occur on roads providing access to these areas; however, construction worker traffic would be dispersed on many roads in the area, and the level of worker traffic anticipated would not adversely affect Level of Service on those roads (see Exhibit U).

Construction of the solar arrays would occur after construction of the wind turbines. As described in Exhibit U, construction traffic associated with the solar arrays would be less than that previously reviewed and approved for construction of the wind turbines. Therefore, traffic impacts would be of a longer duration due to the addition of solar arrays to the approved facility, but there would be fewer daily truck trips during construction of the solar arrays and therefore a lower level of impact.

The Council previously found in the Final Order on the ASC (ODOE 2017) that of the five protected areas south of I-84, only the Boardman Research Natural Area and Lindsay Prairie Preserve are likely to experience impacts from facility construction traffic. The Certificate Holder will continue to employ BMPs as described in Exhibit U to ensure that access restrictions to any protected area will be temporary and timed to avoid peak traffic flow. Following construction, traffic levels will return to normal. The addition of solar arrays will result in up to two additional permanent staff which will not materially affect traffic during facility operations.

3.3 Water Use and Wastewater – OAR 3450-021-0010(1)(l)(C)(iii)(iv)

(iii) Water use during facility construction or operation;

(iv) Wastewater disposal resulting from facility construction or operation;

As previously found by the Council, no significant water or wastewater impacts to protected areas are anticipated from the Facility (ODOE 2017). As described in Exhibit O, no ground or surface water withdrawals will take place for construction of the Facility beyond those already permitted for existing water suppliers. During operation, the Facility would have minimal water needs that would be fulfilled through the use of exempt wells at the O&M Buildings. Water used during Facility construction or operation will continue to not impact water availability or use at protected areas.

Stormwater runoff will continue to be managed on site according to the Best Management Practices (BMPs) as described in the NPDES 1200-C/Erosion and Sediment Control Plan (Attachment I-2), such that no stormwater will leave the Site Boundary. No protected area would be affected by stormwater runoff from the Facility Area. Sanitation wastewater during construction will continue to be contained in portable toilets, to be provided and maintained by a licensed contractor. Wastewater generated at the O&M Buildings during Facility operation will be handled by an on-site septic system, to be permitted prior to construction. No protected area would be impacted by sanitation wastewater related to the Facility. Exhibit O provides additional information on water use and Exhibit V provides information on wastewater.

As previously found by the Council in the Final Order on the ASC, the addition of solar arrays and related or supporting facilities will not alter the conclusion that there will be no significant impacts to protected areas due to water use at the Facility (ODOE 2017).

3.4 Visual Impacts – OAR 3450-021-0010(1)(l)(C)(v)(vi)

(v) Visual impacts of facility structures or plumes.

(vi) Visual impacts from air emissions resulting from facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.

The Council previously found that while the Facility components would result in a change to the existing viewshed of the protected areas, due to the low impact to users, no specified management of scenic or visual qualities (or designated views or viewsheds), and presence of similar structures within the existing viewshed, the visual impacts of construction and operation of the Facility would not likely result in a significant adverse impact to any protected area (ODOE 2017). The inclusion of

solar arrays in the Facility, as described in RFA 4, will result in potential new visual impacts to include views of the solar panels as well as potentially two new overhead collector lines within the solar micrositing area. Inverters, transformers, and distributed energy storage containers will generally be subordinate to the view of the panels themselves. Class I areas, as defined in OAR 340-204-0050, consist of the 12 federally-designated Wilderness Areas in Oregon; none of which are located within the Analysis Area.

The Facility would not generate any emissions plumes, so would not cause any visual impacts from air emissions. Potential visual impacts due to dust created during construction of the Facility will be largely prevented by following BMPs for dust control as detailed in Exhibit O.

The Council previously made findings about views of wind turbines and related or supporting facilities in the Final Order on the ASC (ODOE 2017). Information about visibility of these features generally is not repeated here, except where it is needed to provide context for information about the proposed solar arrays.

3.4.1 Solar Arrays

The solar array components are described in further detail in Exhibit B. The solar panels will be the most visible component of the solar arrays and will consist of solar module strings mounted on single-axis tracker systems.

The visibility of the solar arrays will depend on topographic or other obstructions and distance from the viewer to the solar arrays. With a maximum height of 16 feet, the arrays won't be visible from sites lower in elevation than the area on which the arrays are constructed. From sites that are similar elevation to the arrays, viewers will see only a line on the horizon, and not individual solar panels. Depending on the viewing distance, viewers at sites higher in elevation sites may have views of the panels, especially if the view direction is toward the angle at which the panel is tilted toward the sun.

To the extent possible, reflectivity of the solar arrays will be minimized. Antireflective coating will be used to reduce glare and the surface of the panels will have high transmittance to increase the amount of light reaching the photovoltaic cells. With these methods, the panels will be less reflective than a natural water body or a coated glass surface that is not antireflective. Additional information on glare from can be found in Exhibit R.

3.4.2 ZVI Analysis

Visual impacts of the Facility are primarily related to potential views of the solar panels. In evaluating the visual impacts, the Certificate Holder first determined whether the solar arrays would be visible from each protected area using digital bare earth modeling. The analysis began with a zone of visual influence (ZVI) analysis (also known as a viewshed or visibility analysis), using Environmental Systems Research Institute ArcGIS software to identify the areas from which the proposed solar panels might be visible. To assess the potential visibility of the structures, the ZVI analysis was performed for both solar arrays.

It should be noted that this "bare-earth" modeling approach, based only on the effects of terrain on visibility, results in a conservative assessment of potential visibility for several reasons. First, in some areas where the analysis indicates Facility structures would potentially be visible, the only visible components might be the solar panels, which would likely be noticeable only at relatively close viewing distances because of their low profile. In addition, the model does not account for distance, lighting, weather, and atmospheric attenuation factors that diminish visibility under actual field conditions. A bare-earth analysis also does not account for the effects of vegetation or buildings, which will in practice block or screen views in some places. Figure L-2 shows the areas from which the solar arrays would potentially be visible based on the ZVI analysis.

The ZVI analysis indicated proposed solar facilities would not be visible from 12 of the 16 protected areas within the Analysis Area. Therefore, the solar facilities would clearly have no impact on these 12 protected areas. The results of the ZVI analysis indicate there would be potential visibility of some portions of the Facility from 4 of the 16 protected areas within the Analysis Area (see Table L-1), based on the existence of a direct line of sight from some portion of the solar facilities to one or more locations within a protected area. The nearest protected area to the solar arrays is the Lindsay Prairie Preserve, located 1.4 mile away by Juniper Canyon Road (see Table L-1), and the Boardman RNA is approximately 5.9 miles from the solar arrays, The ZVI analysis indicated that solar facilities would potentially be visible from small portions of both protected areas. The analysis also indicated potential visibility of solar facilities from portions of the Umatilla National Wildlife Refuge and the McNary National Wildlife Refuge, for which the respective viewing distances are 17.3 miles and 31.5 miles. The impact analysis also concluded there would be no visual impact from the Umatilla National Wildlife Refuge or the McNary National Wildlife Refuge; although the ZVI analysis indicated potential visibility from these protected areas (i.e., a direct line of sight), viewers would not be able to detect the low-profile solar facilities at such long distances.

Potential visibility is but one of several factors that comprise an assessment of visual impact to a protected area. Other factors to consider include the viewing distance; other natural and manmade features visible within the view; the likely number and nature of visitors to a protected area; and whether there is any management direction related to preservation of scenic quality, either within the protected area or outside of it. Table L-1 provides a summary of the visual impact assessment for each of the 16 protected areas.

The two protected areas closest to the Facility, the Boardman RNA and the Lindsay Prairie Preserve, would respectively have background and middle ground views of the Facility. The following paragraphs provide a visual impact assessment specific to these two protected areas.

3.4.3 Boardman RNA

The ZVI analysis indicates potential visibility of the Facility from several locations within the RNA, primarily in the northeastern and southeastern corners of the area, at a background viewing distance of 5.9 miles to about 7 miles. Because the solar arrays will have a maximum height of 16 feet, it is highly unlikely that they could be detected or identified by viewers at this distance. If any

of the solar facilities were visible, the incremental visual contrast they would create within an existing modified landscape that includes transmission lines and wind turbines would be minimal.

Wind turbines associated with the approved Facility were previously noted to be visible from the Boardman RNA. The RNA is located entirely within the Boardman Bombing Range, and thus is not accessible to the public. The site is protected for preservation of native vegetation and wildlife and is visited only occasionally by The Nature Conservancy (TNC) staff doing monitoring or maintenance activities (personal communication between Thomas Kruger, Tetra Tech, and Jeff Rosier, TNC, March 9 2015). Any views of the Facility would not compromise the purpose of the RNA and would affect few users for a short duration. Additionally, the site is not managed for its scenic qualities, except as related to vegetation within the site; views of the Facility would not interfere with this purpose. Moreover, the existing viewshed includes transmission lines, wind turbines, and agricultural irrigation equipment. Therefore, the addition of the solar arrays to the Facility does not alter the Council's prior conclusion that potential visual impact of the Facility on the Boardman RNA is considered to be negligible.

3.4.4 Lindsay Prairie Preserve

The ZVI analysis indicates potential visibility of the Facility solar panels from a small area in the northeastern corners of the Preserve at a middleground viewing distance of approximately 1.5 mile. Because the solar arrays will have a maximum height of 16 feet, it is unlikely that they would be noticed by viewers at this distance. If they were visible, the arrays would appear as a thin dark line on the horizon and would create minimal visual contrast.

The Preserve is fenced, the access is gated and locked, and there are no visitor facilities of any kind. Although the site is open to the public, TNC reports that it receives no known public use and is only occasionally visited by TNC staff (personal communication between Thomas Kruger, Tetra Tech, and Jeff Rosier, TNC, March 9, 2015). Any views of the Facility would not compromise the purpose of the Preserve and would affect at most a few users for a short duration. The site is not managed for its scenic qualities, except as related to vegetation within the site, and views of the Facility would not interfere with this purpose. Wind turbines from the approved Facility previously were noted to be visible at close viewing distances from this area. Based on the potential for minimal visual contrast that might be visible to very few viewers in a small portion of the Preserve, the addition of the solar arrays and related or supporting facilities does not alter the Council's prior conclusion that the potential visual impact of the Facility on the Lindsay Prairie Preserve would be negligible.

3.4.5 Visual Impact Summary

Based on this analysis, the Certificate Holder concludes that there would be no significant visual impacts to any protected areas within the Analysis Area. The results of the ZVI analysis indicate there would be potential visibility of some portions of the Facility from at most 4 of the 16 protected areas within the Analysis Area. Because of the low profile and minimal reflectivity of the

arrays and long distances between the protected areas and the arrays, expected that the arrays will have minimal or no visibility and no visual impact from two of the protected areas (the Umatilla and McNary wildlife refuges). Based on similar visibility conditions and extremely limited viewership, the Facility is expected to have negligible visual impact on the Boardman RNA and the Lindsay Prairie Preserve. Therefore, the addition of the solar arrays to the Facility will not result in a significant adverse visual impact to protected areas. As modified by RFA 4, views of the Facility will continue to be dominated by wind turbines and other infrastructure.

4.0 Conclusions

The Analysis Area contains all or part of 16 protected areas. The Certificate Holder analyzed potential impacts to these areas and concluded as follows:

- Noise. Based on the results of the noise modeling presented in Exhibit X, the addition of solar arrays to the approved Facility would result in no significant difference in operational or construction noise at the 16 protected areas within the Analysis Area.
- Traffic. The addition of solar arrays to the approved Facility would not alter the previous analysis demonstrating that Facility-related traffic would not be sufficiently high, nor located so as to significantly impact any protected areas. Some short-term, intermittent and temporary delays may be experienced during Facility construction by visitors attempting to reach two of the protected areas; however, these would be temporary and traffic conditions would return to typical low levels following construction. Therefore, there would be no significant impact to traffic resulting from the operation of the Facility.
- Water. The Facility would not use water in sufficient quantities or from sources that would significantly impact any protected areas. Therefore, consistent with previous conclusions for the approved wind turbines and related or supporting facilities, there would be no significant impacts to protected areas by water use at the Facility.
- Wastewater. The addition of solar arrays to the approved Facility would not change the fact that the Facility would manage its very limited quantities of wastewater on-site and would thus not significantly impact any protected areas. Therefore, there would be no significant impacts to protected areas due to wastewater generated at the Facility.
- Visual. The Facility would potentially be visible from 4 of the 16 protected areas in the Analysis Area. However, due to distance from the Facility, topographic obstructions, other features within view (i.e. wind turbines and other infrastructure), low user numbers at the nearest sites, and an overall lack of management direction applicable to scenic quality beyond the boundaries of each protected area, the addition of solar arrays to the approved Facility would not alter that the Council's previous finding that the Facility would not have a significant visual impact on any protected area.

5.0 References

ODOE (Oregon Department of Energy). 2017. Final Order in the Matter of the Application for a Site Certificate for the Wheatridge Wind Energy Facility. April 2017.

Wheatridge (Wheatridge Wind Energy, LLC). 2015. Wheatridge Wind Energy Facility Application for Site Certificate. Prepared by Tetra Tech, Inc. July 2015.

Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure L-1 Protected Areas within the Analysis Area

MORROW AND UMATILLA COUNTIES, OR

Umatilla Hatchery
Irrigon Hatchery
Irrigon Wildlife Area
Power City Wildlife Area
McNary National Wildlife Refuge
Umatilla National Wildlife Refuge
Hat Rock State Park
Cold Springs National Wildlife Refuge
Willow Creek Wildlife Area
Three Mile Adult Holding Hatchery
Coyote Springs Wildlife Area
Oregon State University Agricultural Research Extension Center
Horn Butte Curlew Area of Critical Environmental Concern
Boardman Research Natural Area
Oregon Trail Area of Critical Environmental Concern
Lindsay Prairie Preserve
Washington
Oregon
Klickitat County
Benton County
Morrow County
Umatilla County
Gilliam County

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (20-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- City/Town
- State Boundary
- County Boundary

Protected Areas

- Oregon State University
- Fish Hatchery
- National Wildlife Refuge
- BLM Area of Critical Environmental Concern
- BLM Research Natural Area
- State Natural Heritage Area
- State Wildlife Area

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

1:380,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

P:\GIS_PROJECTS\NextEra\Wheatridge_Solar\Figures\Exhibit_L\NextEra_Wheatridge_RFA4_ExhibitL_FigureL-1_11i17i_20181128.mxd

Wheatridge Wind Energy Facility Request for Amendment 4

Figure L-2 Viewshed Analysis

MORROW AND UMATILLA COUNTIES, OR

Umatilla Hatchery
Irrigon Hatchery
Irrigon Wildlife Area
Power City Wildlife Area
McNary National Wildlife Refuge
Umatilla National Wildlife Refuge
Hat Rock State Park
Cold Springs National Wildlife Refuge
Willow Creek Wildlife Area
Three Mile Adult Holding Hatchery
Coyote Springs Wildlife Area
Oregon State University Agricultural Research Extension Center
Horn Butte Curlew Area of Critical Environmental Concern
Boardman Research Natural Area
Oregon Trail Area of Critical Environmental Concern
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Gilliam County

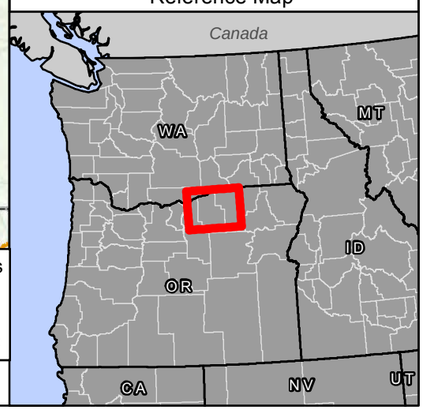
Approved Site Boundary (Approved Wind Micrositing Corridors)
Amended Site Boundary (Proposed Solar Micrositing Corridors)
Analysis Area (20-mile Buffer)
Interstate Highway
US Highway
State Highway
City/Town
State Boundary
County Boundary

Protected Areas
- Oregon State University
- Fish Hatchery
- National Wildlife Refuge
- BLM Area of Critical Environmental Concern
- BLM Research Natural Area
- State Natural Heritage Area
- State Wildlife Area

TETRA TECH
NEXTera ENERGY RESOURCES

Facility Viewshed Analysis
- Not Visible
- Potentially Visible

Reference Map



1:380,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

P:\GIS_PROJECTS\NextEra\Wheatridge_Solar\Figures\Exhibit_L\NextEra_Wheatridge_RFA4_ExhibitL_FigureL2_11x17i_20181128.mxd

Exhibit M

Applicant's Financial Capability

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit M will be completed as part of a supplemental submittal.

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Exhibit O

Water Requirements

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
Mgal	million gallons
MW	megawatts
NPDES	National Pollutant Discharge Elimination System
OAR	Oregon Administrative Rule
ODOE	Oregon Department of Energy
ORS	Oregon Revised Statutes
RFA	Request for Amendment

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment (RFA) 4 to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit O provides information on anticipated water use during construction and operation of the Facility, to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(1)(o) paragraphs (A) through (G). Paragraphs (D) and (F) are not applicable because the Facility is not a thermal power plant or in need of a groundwater permit. OAR 345 Division 22 does not provide an approval standard specific to Exhibit O.

As detailed in the following sections, although the proposed changes create additional water needs for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

Certificate conditions previously adopted by the Council for compliance with respect to OAR 345-022-0010(1)(o). Conditions applicable to water include:

- Condition CON-SP-01: Operate under an Erosion and Sediment Control Plan required under the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge General permit 1200-C.
- PRE-WM-02: Confirmation of no surface/ground/drinking water impacts from concrete washout water.

2.0 Description of Water Use – OAR 345-021-0010(1)(o)(A)

OAR 345-021-0010(1)(o) Information about anticipated water use during construction and operation of the proposed facility. The applicant shall include:

OAR 345-021-0010(1)(o)(A) A description of the use of water during construction and operation of the proposed facility.

2.1 Construction

2.1.1 Uses

The primary water uses during construction of the Facility as modified under RFA 4 will be to mix water into concrete for foundations and to water roads for dust control. Concrete foundations will be poured for solar modules, transformer pads, and the catchment and for road construction (grading and compaction). Water trucks will be used to control dust generation in all disturbed areas during road construction, as required by the Erosion and Sediment Control Plan (Condition CON-SP-01). Fire prevention represents a minor water use; this would involve stationing a water truck at the job site to keep the ground and vegetation moist during extreme fire risk conditions.

For the construction of foundations, water will be transported to concrete batch plant sites (located at laydown areas) where it will be used to mix wet concrete. From the batch plant, the wet concrete will be transported to the construction sites in concrete trucks for use in foundation installation. The Certificate Holder may choose to buy concrete directly from licensed suppliers in the area. In that case, the on-site concrete batch plants would not be needed and the water required for concrete mixing would be provided by the concrete suppliers under their existing permits.

2.1.2 Amounts

During construction, the proposed changes will require an anticipated maximum of 36.3 million gallons (Mgal) of water. This water will be used in activities described above. Water use totals are estimated based on construction of the solar array taking place during a single 12-month construction period. The construction period for the solar arrays may overlap with construction of

the wind turbines. If this occurs, less water may be needed for road watering. Therefore, the totals presented here represent the worst case anticipated water needs.

Concrete mixing for foundations uses a standard assumption of 30 gallons of water per cubic yard of concrete. Exhibit G identifies 112,462 cubic yards of concrete needed for foundations and the catchment. Water for road construction assumes 25 gallons per lineal foot of road. Exhibit B identifies 72,804 feet/13.8 miles of roads. Water use for dust control assumes 100,000 gallons per day, 6 days per week, over a 12-month construction period. Actual dust control water use will vary, depending on the timing of construction and the season, precipitation, soil conditions, temperature, and frequency of repeat disturbance. None of these factors can be controlled or easily estimated by the contractor.

Estimated total water usage for concrete mixing, road construction, and dust control for the proposed changes in RFA 4 is 36.3 Mgal, broken up as follows:

- Total water for concrete mixing – 3,373,860 gallons
- Total water for road construction – 1,820,100 gallons
- Total water for dust control – 31,200,000 gallons

Based on a 12-month construction period under typical environmental conditions, the average monthly water demand would be approximately 3 Mgal; the average daily water demand would be approximately 116, 647 gallons.

A worst-case water use figure would result from construction in particularly dry weather conditions with high temperatures, which is estimated to require approximately 50 percent greater water use for dust control than in average conditions. Based on this assumption, a 'worst case' water estimate could increase to an estimated 54.5 Mgal. The worst-case total average monthly water demand for all construction and dust control would become approximately 4.5 Mgal, and the average daily water demand would increase to approximately 174,971 gallons.

The total amount of water identified in the Application for Site Certificate (ASC), as needed for construction during average conditions, would total approximately 56.5 Mgal over an 18-month construction window, amounting to approximately 3.14 Mgal per month. The worst-case water usage identified in the ASC would be approximately 78 Mgal, amounting to approximately 4.3 Mgal per month. Modifications proposed under RFAs 1, 2, and 3 do not alter the amount of water or procurement sources than what was identified in Exhibit O of the ASC.

Adding the amounts proposed in RFA 4 with the amounts of water usage from the ASC would put the average conditions water use at 92.8 Mgal (7.7 Mgal per month) and worst-case total water usage for the Project at 132 Mgal (11 Mgal per month) over a 12-month construction period.

As was noted in the ASC, the primary consumer of water during Facility construction is dust control on access roads. The total water use under average conditions assumes that all Facility roads will be watered multiple times each day, even in portions of the Facility where no construction is underway. In reality, Facility construction will be a focused effort on specific portions of the Facility to maximize efficiency, and will not require dust control where no construction is taking place.

2.1.3 Disposal

The Certificate Holder does not anticipate any discharge of water from the Facility. During construction, water used for dust control will infiltrate into the ground or evaporate into the atmosphere. Because of the relatively low rates of water use and application, it is assumed that no run-off will occur outside of the expanded Site Boundary. Construction related stormwater runoff will be managed according to an NPDES 1200-C permit (Condition CON-SP-01). Water used for foundations will remain in the concrete mix. Management and handling of concrete truck washout is discussed in Exhibit V and Condition PRE-WM-02. No water used for the Facility will be discharged into wetlands, lakes, rivers, or streams. During construction, sanitary facilities will consist of portable toilets that will not require water and will be maintained by a licensed service provider.

2.2 Operation

Operation of the solar arrays may require up to 650,250 gallons of water per year for solar panel washing. The distributed battery storage system will not require any water during operations. For the purpose of this analysis, it is conservatively assumed that the array panels will be washed twice a year. At an estimated 0.5 gallon per module for a total of 650,250 modules, each wash will require approximately 325,125 gallons, for a total of 650,250 gallons per year. The use of 650,250 gallons per year for this purpose will result in an average daily consumption during operations of approximately 1,800 gallons.

Advancements in robotic panel cleaning has the potential to dramatically reduce the water needs for solar panel washing. Therefore, the estimate of 325,125 gallons per wash likely overestimates the amount of water that will actually be used. Water will be applied via tanker truck for cleaning and will not have added solvents or chemicals. Water from this activity will not be discharged into wetlands, streams, or waterways. Washwater will be discharged by evaporation and seepage into the ground and, if a permit is deemed necessary, will be covered under an Oregon general water pollution control facilities permit, WPCF-1700-B, Washwater Discharge from Equipment Cleaning (see Exhibit E). Stormwater will also infiltrate into the ground.

As described in the ASC, each Facility operations and maintenance building would require less than 5,000 gallons of water per day. This is considered an exempt use, which would not require a new water right to be obtained under Oregon Revised Statutes (ORS) 537.545. The changes proposed under RFA 4 do not affect the water use for each operations and maintenance building.

3.0 Water Sources – OAR 345-021-0010(1)(o)(B)(C)

> *OAR 345-021-0010(1)(o)(B) A description of each source of water and the applicant's estimate of the amount of water the facility will need during construction and during operation from each source under annual average and worst-case conditions.*

OAR 345-021-0010(1)(o)(C) A description of each avenue of water loss or output from the facility site for the uses described in (A), the applicant's estimate of the amount of water in each avenue under annual average and worst-case conditions and the final disposition of all wastewater.

The Certificate Holder intends to use water trucks for the delivery of water from nearby locations with existing water rights as identified in Table O-1. If these are not sufficient sources of water, the Certificate Holder will seek to obtain water from other licensed providers in nearby cities.

No groundwater permit, surface water permit, or water right transfer is anticipated for this Facility because water will be procured from municipal sources, as near to the construction sites as reasonably possible. The Certificate Holder has re-contacted the suppliers identified in the ASC and listed in Table O-1, who have tentatively indicated willingness and ability to supply water for the Facility. Attachments O-1, O-2, O-3, and O-4 are records of communication with these water suppliers. Suppliers will most likely contract for water with the Facility construction contractor, though the Certificate Holder may choose to contract directly with the suppliers. Letters documenting formal commitments from each water supplier will be provided to the Council prior to construction.

The quantities available shown in Table O-1 are based on written correspondence from the water suppliers contacted and demonstrate that an adequate supply of water for Facility construction is available. The non-binding commitments indicate a supply of up to 10.8 Mgal per month. Although this is 0.2 Mgal more than "worst-case" water use, actual Facility construction will be a focused effort on specific portions of the Facility in order to maximize efficiency and limit water use.

Table O-1. Potential Water Suppliers

Supplier Name	Contact	Quantity Available (gallons)	Water Right Certificate Number
Hermiston Public Works	Roy Bicknell	2.2 Mgal per month	G6831
Stanfield Public Works	Scott Morris	1.8 Mgal per month	12224 and 66058
Boardman Public Works	Dave Winters	150,000 – 300,000 gallons per month	40336 and 2624
Port of Morrow	Gary Neal	6.5 Mgal per month	G7158, G8263, G5332, G10976, G12729, G13283, G10312, G4626, G10312, G4626, G12370

4.0 Explanation of Lack of Need for Groundwater/Surface Water Permit or Water Right Transfer – OAR 345-021-0010(1)(o)(E)

OAR 345-021-0010(1)(o)(E) If the proposed facility would not need a groundwater permit, a surface water permit or a water right transfer, an explanation of why no such permit or transfer is required for the construction and operation of the proposed facility.

The Council previously found that the Facility, as approved and as amended, will comply with the Groundwater Act of 1955 and the rules of Oregon Water Resources Department (ODOE 2017). Consistent with the approved Site Certificate, the Facility as modified by RFA 4 does not require any groundwater permits, water rights, or surface water permits. As discussed above, water for construction will either be obtained from the City under an existing municipal water right or provided from an existing or newly constructed well or wells permitted under a limited water use license, which Oregon Water Resources Department would issue to the landowner or to the Certificate Holder's contractor. At the completion of construction activities, this well may be used by the landowner for pre-existing uses; may be abandoned; or may be used for exempt groundwater purposes pursuant to ORS 537.545.

5.0 Mitigation Measures – OAR 345-021-0010(1)(o)(G)

OAR 345-021-0010(1)(o)(G) A description of proposed actions to mitigate the adverse impacts of water use on affected resources.

No adverse impacts are expected to result from Facility water use during construction or operation as modified by RFA 4; therefore, no new mitigation measures are proposed. Impacts of water use on resources will be minimized through the requirements identified in Site Certificate Conditions CON-SP-01 and PRE-WM-02.

6.0 Conclusions

Based on the information presented in this exhibit, the Facility as modified by RFA 4 continues to satisfy the requirements of OAR 345-021-0010(1)(o).

7.0 References

ODOE (Oregon Department of Energy). 2017. Final Order in the Matter of the Application for a Site Certificate for the Wheatridge Wind Energy Facility. April 2017.

Attachment O-1: Record of Correspondence with Boardman Public Works Department

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From:	Kevin Kennedy
To:	Gulick, Kristen
Subject:	RE: RESPONSE NEEDED ASAP - Boardman Public Work Agreement with Wheatridge Wind/Solar Project
Date:	Wednesday, October 17, 2018 1:33:38 PM

Hello, Yes the agreement in place that was reached with Dave Winters can still apply. Any questions, feel free to contact me. Thank you

Kevin Kennedy
Public Works Director
City of Boardman
kennedyk@cityofboardman.com
PH-541-481-9252
Fax-541-481-3244

From: Gulick, Kristen [mailto:Kristen.Gulick@tetratech.com]
Sent: Wednesday, October 17, 2018 10:51 AM
To: Dave Winters <Public.Works@cityofboardman.com>; Kevin Kennedy <KennedyK@cityofboardman.com>
Subject: RESPONSE NEEDED ASAP - Boardman Public Work Agreement with Wheatridge Wind/Solar Project

Hello,
I am contacting you on behalf of the Wheatridge Wind/Solar Project.
Correspondence was received from you in 2014 confirming that Boardman Public Works will be able to supply water (approximately 300,000gals. pre month during non-seasonal usage, drop down to 150,000 gals. Per month from June-Sept., same as before) as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tetratech.com
Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

your system.

Think Green - Not every email needs to be printed.

Attachment O-2: Record of Correspondence with Hermiston Public Works Department

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From:	Roy Bicknell
To:	Gulick, Kristen; Alex Mccann
Subject:	RE: RESPONSE NEEDED ASAP - Hermiston Public Works Agreement with Wheatridge Wind/Solar Project
Date:	Monday, October 22, 2018 8:52:04 AM

Kristen,

At this time, it appears we could still provide the water as the letter states.

Thank you~Roy

From: Gulick, Kristen [mailto:Kristen.Gulick@tetratech.com]
Sent: Monday, October 22, 2018 8:11 AM
To: Alex Mccann <amccann@hermiston.or.us>; Roy Bicknell <rbicknell@hermiston.or.us>; Roy Bicknell <rbicknell@hermiston.or.us>
Subject: RESPONSE NEEDED ASAP - Hermiston Public Works Agreement with Wheatridge Wind/Solar Project

Hello,
I am contacting you on behalf of the Wheatridge Wind/Solar Project.
Correspondence was received from you in 2014 confirming that Hermiston Public Works will be able to supply water (approximately 2.2 million gallons of water per month, same as before) as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

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Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

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Attachment O-3: Record of Correspondence with Stanfield Public Works Department

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From:	Scott Morris
To:	Gulick, Kristen
Subject:	RE: RESPONSE NEEDED ASAP - Stanfield Public Works Agreement with Wheatridge/Solar Project
Date:	Wednesday, October 17, 2018 11:44:27 AM

Kristen

Yes the city would still be able to supply that same amount of water. If you need anything else you can give me a call. My number is below.
Thanks.

Scott Morris
Public Works Drector
City of Stanfield
541-561-8292

From: Gulick, Kristen [mailto:Kristen.Gulick@tetratech.com]
Sent: Wednesday, October 17, 2018 10:42 AM
To: smorris@cityofstanfield.com
Subject: RESPONSE NEEDED ASAP - Stanfield Public Works Agreement with Wheatridge/Solar Project

Hello,
I am contacting you on behalf of the Wheatridge Wind/Solar Project.
Correspondence was received from you in 2014 confirming that Stanfield Public Works will be able to supply water (approximately 60,000 gallons of water per day, same as before) as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tetratech.com
Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

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Attachment O-4: Record of Correspondence with Port of Morrow

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From:	Gary Neal
To:	Gulick, Kristen
Cc:	Mark Patton; Ryan Neal; Miff Devin
Subject:	RE: RESPONSE NEEDED ASAP - Port of Morrow Public Works Agreement with Wheatridge/Solar Project
Date:	Wednesday, October 17, 2018 12:01:17 PM

Kristen: The Port of Morrow is committed to being able to supply the needed construction water for the Wheatridge Wind/Solar Project as previously represented. Please contact us whan you are ready to start the project and have the need for an access point with meter for the construction water.

Sincerely
Gary Neal

From: Gulick, Kristen <Kristen.Gulick@tetratech.com>
Sent: Wednesday, October 17, 2018 10:23 AM
To: Gary Neal <GaryN@portofmorrow.com>
Cc: Mark Patton <MarkP@portofmorrow.com>
Subject: RESPONSE NEEDED ASAP - Port of Morrow Public Works Agreement with Wheatridge/Solar Project

Hello,
I am contacting you on behalf of the Wheatridge Wind/Solar Project.
Correspondence was received from you in 2014 confirming that the Port of Morrow Public Works will be able to supply water (approximately 6.5 millions gallons per month, same as before) as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

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Exhibit P

Fish and Wildlife Habitats and Species

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit P will be completed as part of a supplemental submittal.

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Exhibit Q

Threatened and Endangered Species

Wheatridge Wind Energy Facility
November 2018

Prepared for
Wheatridge Wind Energy, LLC

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy Facility, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	megawatt
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ORBIC	Oregon Biodiversity Information Center
RFA 4	Request for Amendment 4
Tetra Tech	Tetra Tech, Inc.
USFWS	U.S. Fish and Wildlife Service
WAGS	Washington ground squirrel

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1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit Q was prepared in consideration of the proposed changes to meet the submittal requirements for the Facility, per Oregon Administrative Rule (OAR) 345-021-0010(1)(q) paragraphs (A) through (G), related to Oregon listed threatened and endangered species. As detailed in the following sections, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for compliance with the respect to the Threatened and Endangered Species standard OAR 345-022-0070. Therefore, the Council may rely on its previous conclusion that the Facility complies with the Threatened and Endangered Species standard OAR 345-022-0070. OAR 345-022-0070 requires that:

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that:

(1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation:

(a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or

(b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

The Final Order on the Approved Site Certificate (ASC) imposed three conditions intended to avoid potential impacts to threatened and endangered species (ODOE 2017a). Under RFA 4, the changes proposed will not compromise the Certificate Holder's ability to comply with these conditions. No new conditions or modifications to the current conditions are needed for protection of listed species.

1.1 Analysis Area

The Analysis Area for all species in Exhibit Q is defined as the Site Boundary plus a 5-mile buffer, as defined by OAR 345-001-0010(59)(a). Figure Q-1 shows the Analysis Area for state-listed and candidate species. Although RFA 4 proposes an expansion to the Site Boundary to accommodate the solar arrays, the Analysis Area is the same as previously analyzed because the Amended Site Boundary is interior to the Approved Site Boundary.

1.2 Agency Consultation

Consultation and coordination with personnel from the Oregon Department of Fish and Wildlife (ODFW) and the United States Fish and Wildlife Service (USFWS) prior to the ASC regarding the presence on and use of areas within the Approved Site Boundary by threatened and endangered plant and wildlife species can be found in the ASC's Exhibit Q (Wheatridge 2015). Consultation and coordination with ODFW and the Oregon Department of Energy (ODOE) with respect to modifications to the Facility proposed in this RFA included a conference call on November 11, 2018, as summarized below.

- Tetra Tech, Inc. (Tetra Tech) provided a summary of the anticipated RFA 4 to Steve Cherry (ODFW), Sarah Esterson (ODOE), and Sara Reif (ODFW), and described the extent and results of biological surveys performed in 2018 associated with the solar micrositing corridors.

- ODFW commented that ODFW Washington ground squirrel (WAGS) survey protocols include surveys of habitat within 1,000 feet of anticipated ground disturbance (which the Certificate Holder plans to complete in 2019), and that ODFW may consider the application complete with some areas remaining to be surveyed if the applicant commits to avoiding WAGS colonies identified during pre-construction surveys.
- ODFW indicated that they did not see any survey gaps based on the effort described in spring 2018 and the planned surveys for 2019.

2.0 Identification of Species – OAR 345-021-0010(1)(q)(A)

OAR 345-021-0010(1)(q) Information about threatened and endangered plant and animal species that may be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0070. The applicant shall include:

OAR 345-021-0010(1)(q)(A) Based on appropriate literature and field study, identification of all threatened or endangered species listed under ORS 496.172(2) and ORS 564.105(2) that may be affected by the proposed facility.

Identification of state-listed or candidate species that might be affected by the Facility involved a combination of literature review and the familiarity of both Tetra Tech and Northwest Wildlife, Inc. personnel with the region. Field studies were then designed to verify the presence/absence of such species within the Analysis Area.

2.1 Desktop Review

Prior to conducting 2018 surveys within the Amended Site Boundary (wildlife habitat mapping and categorization, special status wildlife species, special status plant species, as described in Exhibit P), Tetra Tech conducted a desktop review to verify and update the status and occurrence of sensitive wildlife and plant species with the potential to occur in the Analysis Area. The information reviewed included federal and state endangered, threatened, proposed, and candidate species; species of concern; birds of conservation concern; and sensitive and sensitive-critical species (Burke Museum of Natural History and Culture 2003, OCS 2016, ODA 2018, ODFW 2016, ODFW 2018, ORBIC 2016, Oregon Flora Project 2017a, Oregon Flora Project 2017b, USFWS 2008, USFWS 2018a, USFWS 2018b, USFWS 2018c, WDNR 2017, Wheatridge 2015).

This exercise resulted in a list of five threatened or endangered species—one plant, two mammal, and two fish—with the potential for occurrence within 5 miles of the Facility. These species are Laurent's milkvetch (*Astragalus collinus* var. *laurentii*; state threatened species, federal species of concern), Washington ground squirrel (*Urocitellus washingtoni*; state endangered species; federal species of concern), grey wolf (*Canis lupus*; state delisted, federal endangered species), bull trout (*Salvelinus confluentus*; federal threatened species), and steelhead (*Oncorhynchus mykiss*; Middle Columbia River summer run; federal threatened species). Three of these species are federally but not state listed, so they are not addressed in this RFA (gray wolf, bull trout, and steelhead).

Additionally, bull trout and steelhead have no potential for occurrence within the Facility as approved or as proposed. State-sensitive species are addressed in RFA 4 Exhibit P.

Based on range maps, and although the Oregon Biodiversity Information Center (ORBIC) had no record of them within the Analysis Area in the ASC (Wheatridge 2015), four Oregon Department of Agriculture (ODA) candidate plant species were included in lists of species that had the potential for occurrence at the Facility (see Exhibit P). These are dwarf suncup (*Cammisonia pygmaea*), disappearing monkeyflower (*Mimulus evanescens*), liverwort monkeyflower (*Mimulus jungermannioides*), and vernal pool mousetail (*Myosurus sessilis*).

The complete USFWS Morrow and Umatilla county lists, tables of the ORBIC results, and tables compiled for the surveys of wildlife, fish, and plant species that have the potential for occurrence at the approved Facility can be found in the ASC (Wheatridge 2015). No additional federal or state threatened, endangered, or candidate species were identified in desktop reviews preceding the 2018 surveys.

2.1.1 Wildlife

WAGS are endangered in the state of Oregon, and are a federal species of concern. The ORBIC database included numerous historical records within the Analysis Area, and surveys from 2011–2013 documented occurrence of the species (Wheatridge 2015).

2.1.2 Plants

2.1.2.1 Laurent's Milkvetch

Laurent's milkvetch is listed by ODA as a threatened species. The ORBIC database included two historical records within 5 miles of the Approved Site Boundary, and two populations were detected during 2011–2013 surveys(Wheatridge 2015).

2.1.2.2 Dwarf Evening-Primrose

Dwarf evening-primrose is listed by ODA as a candidate species. Found on rocky slopes, sandy banks, and in dry, gravelly washes, this species' range may include the Analysis Area. However, no records were found within 5 miles of the Approved Site Boundary in the ORBIC database, nor were any recorded during 2011–2013 surveys (Wheatridge 2015).

2.1.2.3 Disappearing Monkeyflower

Disappearing monkeyflower is listed by ODA as a candidate species. Found in moist, heavy gravel that is inundated in early spring, this species' range may include the Analysis Area. However, no records were found within 5 miles of the Approved Site Boundary in the ORBIC database, nor were any recorded during 2011–2013 surveys (Wheatridge 2015).

2.1.2.4 Liverwort Monkeyflower

Liverwort monkeyflower is listed by ODA as a candidate species. Found in basalt crevices in seepage zones of vertical cliffs and canyon walls, this species' range may include the Analysis Area.

However, no records were found within 5 miles of the Approved Site Boundary in the ORBIC database, nor were any recorded during 2011–2013 surveys (Wheatridge 2015).

2.1.2.5 Sessile Mousetail

Sessile mousetail is listed by ODA as a candidate species. Found in moist areas associated with drying vernal pools and alkali flats, this species' range includes the Analysis Area. However, no records were found within 5 miles of the Approved Site Boundary in the ORBIC database, nor were any recorded during 2011–2013 surveys (Wheatridge 2015).

Table Q-1. State-Listed and Candidate Species with the Potential to Occur in the Analysis Area

Scientific Name (synonym)	Common Name	Federal Status[1]	State Status[2]	Occurrence within Analysis Area	Potential Habitat within the Amended Site Boundary
Mammals					
Urocitellus washingtoni	Washington ground squirrel	SOC	E	Yes (ORBIC, ASC Exhibit Q)	Yes
Plants					
Astragalus collinus var. *laurentii*	Laurence's milkvetch	SOC	T	Yes	Unlikely
Eremothera (Camissonia) pygmaea	Dwarf evening-primrose	SOC	C	None	No
Erythranthe (Mimulus) inflatula (evanescens)	Disappearing monkeyflower	SOC	C	None	No
Erythranthe (Mimulus) jungermannioides	Liverwort monkeyflower	–	C	None	No
Myosurus sessilis	Sessile mousetail	SOC	C	None	No

Sources: Burke Museum of Natural History and Culture 2003, OCS 2016, ODA 2018, ODFW 2016, ODFW 2018, ORBIC 2016, Oregon Flora Project 2017a, Oregon Flora Project 2017b, USFWS 2008, USFWS 2018a, USFWS 2018b, USFWS 2018c, WDNR 2017, Wheatridge 2015.

1. SOC = Species of Concern.

2. T = Threatened, E = Endangered, C = Candidate for Listing.

2.2 Field Surveys

2.2.1 Wildlife

2.2.1.1 Washington Ground Squirrels

Tetra Tech conducted surveys for WAGS within the Amended Site Boundary from May 1-4, 2018, and again from May 30-31, 2018. The purpose of these surveys was to update and to supplement surveys completed for the ASC (see Exhibit P). Survey methods and results are described in detail in

the reports attached to the ASC (Wheatridge 2015) and Exhibit P, Attachment P-1. Areas surveyed during the 2011–2013 surveys and areas surveyed during the 2018 surveys are shown in Figure Q-2. Additional areas were added to the Amended Site Boundary after 2018 field surveys were completed; therefore, they were not surveyed in 2018. As requested during agency consultation with ODFW and ODOE on November 11, 2018, planned survey areas for WAGS during spring 2019 include all WAGS habitat within 1,000 feet of ground disturbance (i.e., permanent and temporary impacts associated with the solar micrositing corridors), as shown in Figure Q-3 (submitted separately under a confidential cover).

2.2.1.2 Listed, Candidate, and Proposed Fish

No field studies were conducted for fish, because construction and operation of the Facility will involve no temporary or permanent impacts to intermittent or perennial fish-bearing streams. Moreover, there is no historical evidence of the occurrence of any state or federal listed, candidate, or proposed fish species within the Amended Site Boundary (per ORBIC results as described in Wheatridge 2015).

2.2.2 Plants

Rare plant surveys were designed to verify the presence or absence of Laurent's milkvetch and the four-candidate species identified as having a possibility of occurrence. For each area of land studied, a single survey was conducted at a time deemed appropriate for detecting these species (early May). Complete descriptions of survey areas and methods can be found in the ASC (Wheatridge 2015) and Exhibit P, Attachment P-1. Areas surveyed during 2011–2013 and areas surveyed during 2018 are shown in Figure Q-2. Additional areas were added to the Amended Site Boundary after 2018 field surveys; therefore, they were not surveyed in 2018.

2.2.2.1 Laurent's Milkvetch

This species was detected during surveys of the Approved Site Boundary (Wheatridge 2015). No individuals of this species were detected in 2018 surveys within the Amended Site Boundary.

2.2.2.2 Dwarf Evening-Primrose

No individuals of this species were detected in 2018 surveys within the Amended Site Boundary.

2.2.2.3 Disappearing Monkeyflower

No individuals of this species were detected in 2018 surveys within the Amended Site Boundary.

2.2.2.4 Liverwort Monkeyflower

No individuals of this species were detected in 2018 surveys within the Amended Site Boundary.

2.2.2.5 Sessile Mousetail

No individuals of this species were detected in 2018 surveys within the Amended Site Boundary.

3.0 Occurrence and Potential Adverse Effects – OAR 345-021-0010(1)(q)(B)

OAR 345-021-0010(1)(q)(B) For each species identified under (A), a description of the nature, extent, locations and timing of its occurrence in the analysis area and how the facility might adversely affect it.

3.1 Wildlife

WAGS occur only in the Columbia Basin of eastern Washington and north-central Oregon. WAGS are a small ground squirrel associated with shrub-steppe habitats of the Columbia Basin ecoregion (Verts and Carraway 1998). In Oregon, the WAGS range extends from Umatilla County, west through Gilliam and Morrow counties, to the John Day River. Concern for the long-term viability of WAGS populations led to their listing by the ODFW as endangered in January 2000. On September 21, 2016, the USFWS announced that listing the WAGS as endangered under the federal Endangered Species Act of 1973 was not warranted (USFWS 2016). WAGS are associated with deep, loose soils in shrub-steppe habitats with a high percentage of grass and forb cover. A secretive species, it is generally active only between February and June, estivating and hibernating deep in burrows through the remainder of the year. The objective of these surveys was to identify WAGS colonies within the areas surveyed, so that impacts to WAGS may be avoided and/or minimized.

Per the ASC, during surveys of the Approved Site Boundary from 2011–2013, 124 detections of WAGS were recorded within the special status vertebrate wildlife species survey corridors associated with the Facility (Wheatridge 2015). These included 50 detections associated with the Wheatridge West turbine group; however, none of these detections occurred within the Amended Site Boundary. These detections ranged from single holes with scat present to larger colonies where WAGS were both seen and heard. WAGS were detected in four habitat types, Basin Big Sagebrush Shrub-steppe, Rabbitbrush/Snakeweed Shrub-steppe, Exotic Annual Grassland, and Native Perennial Grassland. Maps of buffers established around all detections were submitted to ODFW and USFWS personnel in early October 2014. A description of results can be found in the ASC (Wheatridge 2015).

Given this known use of the area, surveys were performed within the Amended Site Boundary during the spring of 2018, as described in Section 2.2.1.1. Biologists recorded one active WAGS colony within the Amended Site Boundary (Figure Q-3). The initial observation was an audio detection at the west side of the colony, in Native Perennial Grassland habitat. Nineteen burrows were identified, with scat occurring at three burrows. Calling was continuous throughout the delineation process. Burrows were scattered across the area, with no more than five in a single location. No other areas of WAGS activity were noted in the Amended Site Boundary.

A potential adverse effect to WAGS would be direct mortality caused by Facility construction activities near the colony. Category 1 habitat related to this colony (i.e., a 785-foot buffer of the colony in suitable habitat) has been avoided by micrositing facilities within the Amended Site

Boundary. Direct mortality is also possible from Facility vehicles throughout the life of the Facility. Potential indirect adverse effects include the loss of potential future suitable habitat (currently not occupied). Most habitat impacts related to the changes proposed in RFA 4 are to Dryland Wheat, which is not suitable WAGS habitat (see Exhibit P). No displacement of WAGS colonies is anticipated as a result of RFA 4 and the construction and operation of the solar arrays.

During pre-construction, construction, and operation, measures will be implemented to avoid both direct and indirect impacts to WAGS, as described in Section 4.

3.2 Plants

No rare or special-status plants were found within the Amended Site Boundary during 2018 surveys. Areas surveyed during 2011–2013 and 2018 are shown in Figure Q-2. Additional areas were added to the Amended Site Boundary after 2018 field surveys, and were therefore not surveyed. These new areas are located primarily in highly disturbed habitat (i.e., areas that are actively farmed and/or adjacent to Bombing Range Road) that is unlikely to support rare plants (as shown in Exhibit P, Figures P-3 and P-4). Therefore, no impacts to rare or special-status plants are anticipated. These areas will be included in pre-construction survey areas, as required by Final Order on ASC Condition 3 (PRE-TE-03). Per this condition, pre-construction plant surveys for Laurent's milkvetch will be conducted, and if the species is found to occur, the Certificate Holder will install flagging around the plant population and avoid any ground disturbance within this zone. Any protection zones that are established will be included on final design construction plans and exclude herbicide use.

4.0 Avoidance and Mitigation – OAR 345-021-0010(1)(q)(C)

> *OAR 345-021-0010(1)(q)(C) For each species identified under (A), a description of measures proposed by the applicant, if any, to avoid or reduce adverse impact.*

4.1 General Measures

The Certificate Holder has implemented and will continue to implement a variety of measures intended to ensure avoidance or minimization of adverse impacts to plants, wildlife, and habitat generally and to state listed and candidate species and their habitats. Many of these measures are described in greater detail in the ASC (Wheatridge 2015) and in RFA 4 Exhibit P. The Certificate Holder will adhere to Site Certificate Conditions PRE-TE-01, PRE-TE-02, and PRE-TE-03, intended to avoid potential impacts to threatened and endangered species. This section identifies those avoidance and mitigation measures that apply to the only listed or candidate species found in the vicinity of the Amended Site Boundary (WAGS).

4.1.1 During Design and Micrositing

During the preliminary design and micrositing of the Facility, avoidance of listed and candidate species of plants and wildlife was ensured by surveying for these species and siting Facility infrastructure outside of locations where these species were found, and outside of Category 1 habitat associated with these species. In accordance with Site Certificate Condition PRE-TE-01, the Certificate Holder will conduct pre-construction surveys, and will engage in the required consultation with ODOE and ODFW to avoid permanent or temporary disturbance in all Category 1 WAGS habitat. While impacts to Category 2 habitat (suitable for WAGS) will be minimized in the final design and micrositing process, any unavoidable impacts will be mitigated for as described in the Habitat Mitigation Plan (ODOE 2017), and in accordance with the ODFW Fish and Wildlife Habitat Mitigation Policy.

Additional pre-construction activities by the Certificate Holder will include compliance with PRE-TE-02 to finalize the Wildlife Monitoring and Mitigation Plan (ODOE 2017), based on the final Facility design, as approved by ODOE in consultation with ODFW.

4.1.2 During Construction

The measures required in the Site Certificate for avoiding and minimizing impacts to wildlife and plants, including listed species (avoidance of flagged areas, construction monitoring, environmental sensitivity training, speed limits), will be implemented during Facility construction, as described in Exhibit P. Prior to construction activities, sensitive areas will be correctly marked with exclusion flagging so that they are avoided during construction.

4.1.3 Post-Construction

The Revegetation Plan, Habitat Mitigation Plan, and Wildlife Monitoring and Mitigation Plan provide guidance and provisions for rehabilitating or mitigating for temporary and permanent impacts to habitat (ODOE 2017). After Facility construction, areas where habitat was temporarily disturbed as a result of construction activities will be restored to their original conditions according to provisions in the Revegetation Plan. Both temporary habitat disturbance and permanent habitat loss will be mitigated for according to provisions of the Habitat Mitigation Plan. Ongoing environmental training for Facility personnel and reporting requirements governing incidental wildlife injuries and deaths on Facility roads will be implemented according to the Wildlife Monitoring and Mitigation Plan.

Speed limits that will minimize the likelihood of death or injury of wildlife generally, and of WAGS in particular, are expected to be implemented throughout the life of the Facility. An approved fire control plan will be implemented throughout the life of the Facility; this is expected to minimize undesired impacts to existing vegetation and wildlife habitats, including habitat for WAGS.

4.2 Wildlife

Initial design and siting of the solar arrays was completed only after the results of surveys for WAGS within the survey areas shown in Figure Q-2 were completed. For each detection of this species, an area of Category 1 habitat was designated, extending 785 feet in suitable habitat beyond the area of documented ground squirrel use (Exhibit P, Figure P-4). An additional buffer of 4,921 feet was designated Category 2 habitat around suitable WAGS habitat. Facility infrastructure was not sited in Category 1 habitat, a standard practice not only meant to avoid existing squirrels and their burrows, but also potential suitable habitat into which squirrels may later disperse.

Additional surveys for WAGS will be conducted in the spring prior to construction of the Facility to ensure that identified areas of use have not expanded to areas where facilities are to be constructed, in accordance with Site Certificate Condition PRE-TE-01. Surveys will ensure that WAGS colonies potentially located in or near the Facility are delineated and avoided in final Facility micrositing (Figure Q-3).

5.0 Protection and Conservation Program Compliance/Impacts – OAR 345-021-0010(1)(q)(D)

> *OAR 345-021-0010(1)(q)(D) For each plant species identified under (A), a description of how the proposed facility, including any mitigation measures, complies with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3).*

There are no species with the potential to occur within the Analysis Area for which ODA has adopted a protection and conservation program. As a result, the Facility is not likely to impact any of ODA's recovery efforts, nor is the Facility likely to cause a significant reduction in the likelihood of survival or recovery of plants with a protection or conservation program under ORS 564.105(3).

6.0 Potential Impacts to Plants, Including Mitigation Measures – OAR 345-021-0010(1)(q)(E)

> *OAR 345-021-0010(1)(q)(E) For each plant species identified under paragraph (A), if the Oregon Department of Agriculture has not adopted a protection and conservation program under ORS 564.105(3), a description of significant potential impacts of the proposed facility on the continued existence of the species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.*

No state threatened, endangered, or candidate species were observed within the Amended Site Boundary. Therefore, construction, operation, and maintenance of the Facility are not expected to

result in a significant reduction in the likelihood of survival or recovery of the state threatened Laurent's milk-vetch, or the state candidates dwarf evening-primrose, disappearing monkeyflower, liverwort monkeyflower, and sessile mouse-tail, because these species are not present within the Amended Site Boundary.

7.0 Potential Impacts to Animals, Including Mitigation Measures – OAR 345-021-0010(1)(q)(F)

OAR 345-021-0010(1)(q)(F) For each animal species identified under (A), a description of significant potential impacts of the proposed facility on the continued existence of such species and on the critical habitat of such species and evidence that the proposed facility, including any mitigation measures, is not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

7.1 Listed, Candidate, and Proposed Wildlife

WAGS are the only state threatened, endangered, or candidate wildlife species found or expected to be found in the Amended Site Boundary. Construction and operation of the solar arrays will have no significant impact on the survival or recovery of the species. Avoidance of impacts to WAGS and their colonies was accomplished through identifying and buffering areas of use and micrositing Facility infrastructure outside of those buffers. No Facility infrastructure will be placed within Category 1 WAGS habitat. Impacts to areas which would potentially be colonized by WAGS (Categories 2, 3, and 4) have been minimized during the micrositing process (see Exhibit P). Mitigation for loss of potentially suitable, but currently unoccupied WAGS habitat will be accomplished through provisions in the Habitat Mitigation Plan (ODOE 2017). Minimization of possible death or injury from interaction with Facility vehicles will be accomplished through speed limits and environmental training of all Facility personnel.

Conditions PRE-TE-01 and PRE-TE-02 require avoidance of any permanent or temporary disturbance in all Category 1 WAGS habitat, and that all sensitive areas are marked with exclusion flagging and avoided during construction (ODOE 2017). No modifications required under RFA 4 will compromise the Certificate Holder's ability to comply with these conditions. Therefore, construction and operation of the Facility are not expected to result in a significant reduction in the likelihood of survival or recovery of WAGS.

7.2 Listed, Candidate, and Proposed Fish

No threatened, endangered, or candidate fish species are found in streams within the Amended Site Boundary. Construction, operation, and maintenance of the Facility are expected to entail no adverse impacts to state listed fish species. No mitigation measures are planned or required.

8.0 Monitoring – OAR 345-021-0010(1)(q)(G)

OAR 345-021-0010(1)(q)(G) The applicant's proposed monitoring program, if any, for impacts to threatened and endangered species.

The Wildlife Monitoring and Mitigation Plan will be updated to account for the Facility layout modifications proposed in this RFA 4 to satisfy the Council's requirements. Post-construction monitoring will be conducted for WAGS colonies as required by PRE-TE-02.

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Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure Q-1 Threatened and Endangered Species Analysis Area

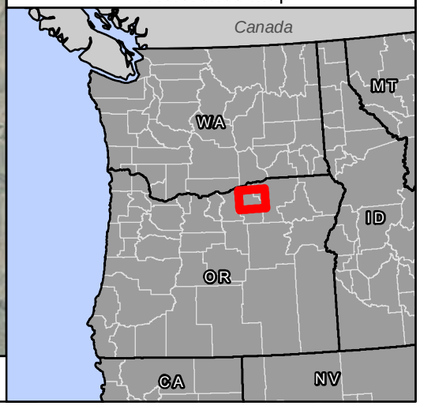
MORROW AND UMATILLA COUNTIES, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (5-mile Buffer)
- Interstate Highway
- State Highway
- County Boundary

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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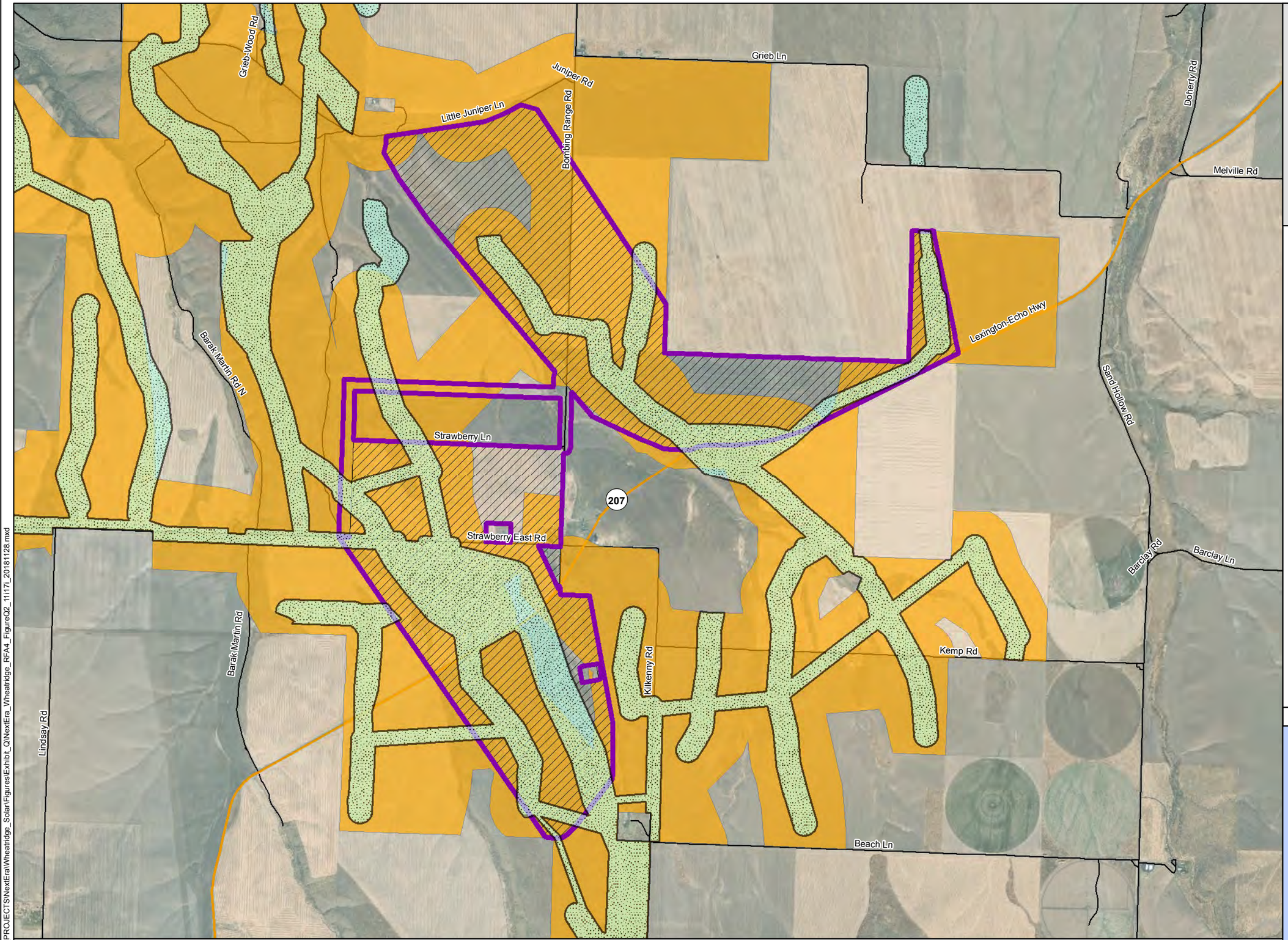
Wheatridge
Wind Energy Facility
Request for Amendment 4

Figure Q-2
Extent of Rare Plants and WAGS Surveys 2011-2018

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- State Highway
- Local Road
- County Boundary

Survey Areas

- 2011-2013 Surveys
- Spring 2018 Surveys

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Reference Map

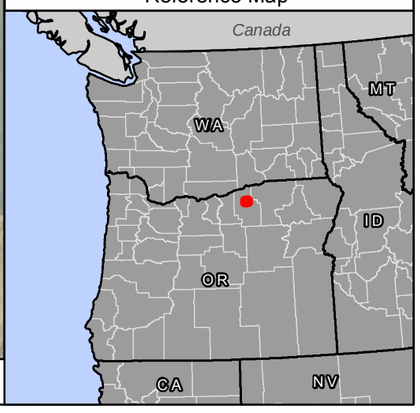

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Figure Q-3. Extent of Planned WAGS Surveys: 2019 is a confidential attachment that will be submitted under a separate cover.

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Exhibit R

Scenic Resources

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ASC	Application for Site Certificate
BLM	Bureau of Land Management
Certificate Holder	Wheatridge Wind Energy, LLC
CMP	Comprehensive Management Plan
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
I-84	Interstate Highway 84
MW	megawatts
NTSA	National Trails System Act
NPS	National Park Service
OAR	Oregon Administrative Rule
ONHT	Oregon National Historic Trail
OR-##	Oregon State Highway Number [##]
RFA 4	Request for Amendment 4
RMP	Resource Management Plan
USFS	U.S. Forest Service
VRM	Visual Resource Management
ZVI	Zone of Visual Influence

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1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit R provides an analysis of the Facility impacts to scenic resources, as required to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010 (1)(r) paragraphs (A) through (F). Exhibit R demonstrates that the Facility, as modified by RFA 4, can continue to comply with the approval standard in OAR 345-022-0080:

> ***OAR 345-022-0080 Scenic Resources***
>
> *…to issue a site certificate, the Council must find that the design, construction, and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impacts to scenic resources and values identified as significant or important in local land use*

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

plans, tribal land management plans and federal land management plans for any lands located within the analysis area described in the project order.

2.0 Analysis Area

The Analysis Area for scenic resources is defined in the Project Order as "the area within the Site Boundary and 10 miles from the Site Boundary" (ODOE 2017). The Site Boundary consists of the Approved Site Boundary and the Amended Site Boundary, and is defined in detail in Exhibits B and C. The Analysis Area is shown on Figure R-1.

3.0 Identification of Significant or Important Scenic Resources – OAR 345-021-0010(1)(r)(A)(B)(E)

OAR 345-021-0010(1)(r) An analysis of significant potential impacts of the proposed facility, if any, on scenic resources identified as significant or important in local land use plans, tribal land management plans and federal land management plans for any lands located within the analysis area, providing evidence to support a finding by the Council as required by OAR 345-022-0080, including:

OAR 345-021-0010(1)(r)(A) A list of the local, tribal and federal plans that address lands within the analysis area.

OAR 345-021-0010(1)(r)(B) Identification and description of the scenic resources identified as significant or important in the plans listed in (A), including a copy of the portion of the management plan that identifies the resource as significant or important.

OAR 345-021-0010(1)(r)(E) A map or maps showing the location of the scenic resources described under (B).

This section documents the inventory of scenic resources identified as significant or important in local, tribal, and federal land use plans applicable to the Analysis Area, as required to demonstrate compliance with the approval standard in OAR 345-022-0080. The Analysis Area includes parts of two Oregon counties, six Oregon municipalities, land administered by the Bureau of Land Management (BLM), National Park Service (NPS), and Department of Defense, as well as designated resources under the jurisdiction of the NPS and the U.S. Forest Service (USFS). The following discussion generally reprises and updates information that was previously provided in the Application for Site Certificate (ASC; Wheatridge 2015). Although some plans have been updated since the original evaluation was conducted, the scenic resources located within the Analysis Area remain the same.

Based on a review of applicable land management plans, the Certificate Holder concludes that there are no scenic resources identified as significant or important by any land use plan applicable to the Analysis Area. The following sections describe the applicable jurisdictions, their applicable land use

plans, and the determination as to whether scenic resources identified in the Analysis Area are considered significant or important. These descriptions are summarized in Table R-1. The Analysis Area and the locations of referenced base map features are shown on Figure R-1.

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Table R-1. Inventory of Important Scenic Resources

Jurisdiction	Plan	Scenic Resources Specified in Plan	Significant or Important Scenic Resources Identified in Analysis Area	Name of Scenic Resource	Location of Scenic Resources Discussed in Plan	Change from Final Order on the ASC?
Counties						
Morrow County	Morrow County Comprehensive Plan and Zoning Ordinance, as updated through 2016	No	No	N/A	Goal 5 Natural Resources Element	Updated plan but no change to scenic resources
Umatilla County	Umatilla County Comprehensive Plan, as amended through 2017	Yes	No	N/A	Chapter 8	Updated plan but no change to scenic resources
Cities						
City of Ione	City of Ione Comprehensive Plan, as referenced in City of Ione 1999, and Zoning Ordinance #158	No	No	N/A	Section 5	No
City of Lexington	City of Lexington Comprehensive Plan (1979)	No	No	N/A	Section IV	No
City of Heppner	City of Heppner Comprehensive Plan (2004)	No	No	N/A	Chapter I	No
City of Hermiston	City of Hermiston Comprehensive Plan (2014)	No	No	N/A	Chapters II, III	No
City of Stanfield	City of Stanfield Comprehensive Plan (2001) and Development Code (2003)	No	No	N/A	Development Code Chapters 2-3	No
City of Echo	City of Echo Comprehensive Plan (City of Echo 2005) and Zoning Administrative Regulations (City of Echo 2010)	No	No	N/A	Comprehensive Plan Section 7-1-5	No
Tribal						
None Applicable	None	–	–	–	–	No
Federal						
BLM, Vale District, Baker Resource Area	Baker Resource Management Plan (BLM 1989)	Yes	No	N/A	Chapter 2, Visual Resources; Management Guidance for applicable Geographic Units; Map 5	No
NPS	Management and Use Plan Update, Oregon National Historic Trail and Mormon Pioneer National Historic Trail (NPS1999)	No	No	N/A	Historic Routes and Significant Resources Chapter	No
Department of Defense	Integrated Natural Resource Management Plan and Integrated Cultural Resource Management Plan for Boardman Bombing Range (Naval Weapons System Training Facility) (U.S. Navy 2012)	No	No	N/A	N/A; scenic resources not addressed in plan	No
USFS/ Oregon Department of Transportation	Blue Mountain Scenic Byway Interpretive Guide (USFS 1993)	Yes	No	N/A	Section II Resource Inventory	No

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3.1 Counties

3.1.1 Morrow County, Oregon

The Morrow County Comprehensive Plan was originally acknowledged as compliant with State of Oregon planning goals in 1986 and was last updated in 2016 (Morrow County 2016). The Certificate Holder reviewed the collection of Morrow County documents that comprise the updated plan for references to scenic resources or sites identified as significant or important.

The Natural Resources Element includes a table with a summary of Goal 5 resource designations; the table entry for "Scenic Views; Sites" states: "Addressed in plan (p. 69) but none identified" (Morrow County 2016). No further information on scenic views or sites is provided in the document. Morrow County acknowledges in the text that due to amendments adopted in 2013 to the Natural Resources Element, which focused on aggregate and mineral resource protections, text pages are known to be out of order, and updated OAR standards will be applied to other resource categories in the future (Morrow County 2016).

Based on review of the applicable documents, the Certificate Holder concludes that the Morrow County Comprehensive Plan does not identify any scenic resource as significant or important for inclusion in this exhibit.

3.1.2 Umatilla County, Oregon

The Umatilla County Comprehensive Plan addresses the 14 statewide planning goals adopted by the State of Oregon (Umatilla County 2017). Chapter 8 of the Plan addresses open space, scenic and historic areas, and natural resources." The Plan states that, "there are areas and views which are commonly recognized as striking in their effect upon those who experience them. Geological features, green vegetation, and water are major scenic features; human works and dry, shrub-steppe landscape are other attractions. So that areas do not lose their eye-catching attributes, plans attempt to identify 'commonly recognized' scenic features and suggest uses for these areas that minimize conflicts with the valuable features" (p. 8-1). No specific scenic resources are identified in this portion of Chapter 8 (Umatilla County 2017).

Subsequent material in Chapter 8 documents the finding that "Umatilla County has a number of outstanding scenic views and pleasant vistas" (p. 8-10; Umatilla County 2017). In response to the finding, the Plan establishes a series of policies intended to protect scenic views in the county. In general, the policies state the need to address and mitigate adverse visual effects of development and discuss programmatic steps to address potential scenic conflicts that might be associated with proposed changes in land use. One of the policies states that Wallula Gap (a prominent physiographic feature along the Columbia River where it enters Oregon) has been recognized as a significant scenic resource and the County shall enact special land use measures to protect this area (p. 8-12; Umatilla County 2017).

Based on the specific content of the plan, the Certificate Holder concludes that Wallula Gap is the only scenic resource that Umatilla County has identified as important or significant. Wallula Gap is located outside the Analysis Area; therefore, the Umatilla County Comprehensive Plan does not identify any significant or important scenic resources for inclusion in this Exhibit.

3.2 Municipalities

3.2.1 City of Lexington

The City of Lexington Comprehensive Plan (1979) establishes a series of goals and policies corresponding to the applicable statewide planning goals. The plan includes a policy goal "to conserve open space and protect natural and scenic resources." This is followed by an objective "to identify open spaces, scenic and historical areas, and natural resources which should be preserved from urban development." Section IV of the plan provides a summary of findings, and includes the statement, "No scenic views, wilderness areas, recreational trails or scenic waterways were identified." Implementing measures listed in the Comprehensive Plan related to scenic resources include the use of an Open Space zoning district; however, there are no areas in the City of Lexington to which that designation has been applied.

Based on the content of the Comprehensive Plan, the Certificate Holder concludes that the City of Lexington does not identify any significant or important scenic resources for inclusion in this Exhibit.

3.2.2 City of Echo

The City of Echo Comprehensive Plan (City of Echo 2005) establishes goals and policies for a series of topical areas corresponding to the statewide planning goals. Section 7-1-5 of the plan states a policy for Open Spaces, Scenic and Historic Areas, and Natural areas to "conserve open space and protect natural scenic, historic, and cultural resources." This is followed with a list of seven policies, none of which specify any particular scenic resource. The city's Zoning Administrative Regulations (Ordinance 350-07 and 358-10) implement the goals and objectives of the comprehensive plan. The zoning regulations do not establish any scenic resource protection requirements or designate any scenic areas.

Based on the content of the Comprehensive Plan and zoning regulations, the Certificate Holder concludes that the City of Echo does not identify any significant or important scenic resources for inclusion in this Exhibit.

3.2.3 City of Ione

Ione is a small, incorporated community located in the west-central part of Morrow County, with a population of approximately 330 persons (Portland State University 2015). The Certificate Holder was unable to obtain or review a copy of the City of Ione Comprehensive Plan. The City of Ione Transportation System Plan (City of Ione 1999) indicates that the comprehensive plan and

implementing regulations were approved in 1979 and have been subsequently amended several times, including in 1987. Section 5 of the Plan establishes Plan Goals and Policies for a series of topical areas corresponding to the statewide planning goals. Section 5 states a policy for Open Spaces, Scenic and Historic Areas, and Natural Resources to "Examine any publicly owned lands including street rights-of-way for their potential open space use before their disposition; and conserve the area's natural resources and protect open space and natural resources which should be preserved from urban development."

The Ione zoning ordinance (Ordinance #158, as amended) implements the Comprehensive Plan (City of Ione, n.d.). The ordinance defines land use districts and establishes corresponding standards for the districts, along with other development standards. Section 2 of the ordinance establishes 10 zoning classifications, including a Permanent Open Space (O) zone. Section 3.85 states that no permanent structures may be built in the O zone; identifies permitted uses as farming, natural areas, outdoor recreational facilities and wildlife management and habitat enhancement; and includes no reference to scenic views or sites (City of Ione, n.d.).

Based on the content of the available planning documents and regulations described above, the Certificate Holder concludes that the City of Ione has not identified any significant or important scenic resources for inclusion in this Exhibit.

3.2.4 City of Hermiston

Hermiston is a community of approximately 17,520 residents (Portland State University 2015) located along Interstate 84 (I-84) in the northwestern corner of Umatilla County. The City of Hermiston Comprehensive Plan and supporting technical report was adopted in 1984, and the plan is updated through amendments to the city development code (City of Hermiston 2018). Chapter II of the Plan includes Background Information and Findings. Under the heading Other Goal 5 Resources, this chapter indicates "According to Oregon State Parks and Recreation Division, there are no wilderness areas, potential or approved Oregon wilderness trails, or state and federal wild/scenic waterways within the Hermiston UGB. Other Goal 5 resources, including outstanding scenic views/sites and indigenous energy resources, are discussed in the appropriate sections below" (City of Hermiston 2014). Subsequent content in Chapter II addresses air, noise, and water quality; natural hazards and development limitations; energy resources and conservation; and open space and recreation but does not include specific information about scenic sites or views.

Chapter III of the Plan identifies policies for the respective topical areas. Under the heading E. Resources (Goals 5, 6, 7 and 13), Policy 7 (p. III-10) is stated as "The City of Hermiston will protect natural resources to the maximum degree possible." The subsequent discussion of implementing actions references the Open Space designation applied to the 100-year floodplain, wetlands in the northeastern part of the city, and the Oregon State University Agricultural Experiment Station. A footnote related to Policy 7 states that "For other Goal 5 resources, see Policy 8: Surface and Groundwater Resources, Policy 9: Aggregate Resources, Policy 10: Historic Resources, and Policy 16: Parks, Recreation and Open Space." Policy 16 (p. III-18) indicates that Hermiston will acquire

and develop additional parks and will preserve as open space city-owned land that possesses recreational, scenic and other environmental qualities or is subject to natural hazards.

Based on the specific content of the Comprehensive Plan, the Certificate Holder concludes that the City of Hermiston has not identified any significant or important scenic resources for inclusion in this Exhibit.

3.2.5 City of Stanfield

Stanfield is an incorporated community with a population of approximately 2,125 residents (Portland State University 2015) located adjacent to I-84 in the in the northwestern part of Umatilla County. The City of Stanfield Comprehensive Plan was adopted in 1983 and updated in 2001 (City of Stanfield 2001). The technical report supporting the comprehensive plan was updated in 1984, and a zoning ordinance was adopted in the same year. The plan and technical report include 14 goals corresponding to the 14 statewide planning goals. Comprehensive planning guidance and zoning are integrated into the City of Stanfield development code (City of Stanfield 2003). The land use districts defined in Chapter 2 of the development code correspond to the comprehensive plan designations; they include an Open Space District, but do not include any districts oriented to scenic resources. Chapter 3 of the development code establishes design standards that include landscaping and screening provisions that relate to the aesthetic aspects of development.

Based on the specific content of the Comprehensive Plan and development code, the Certificate Holder concludes that the City of Stanfield has not identified any significant or important scenic resources for inclusion in this Exhibit.

3.2.6 City of Heppner

Heppner is a community of approximately 1,295 residents (Portland State University 2015) located at the intersection of OR-74 and OR-207, near the center of Morrow County. The City of Heppner initially developed a comprehensive plan in 1980; it was last updated in 2004. Chapter I of the Plan identifies a goal "To conserve open space and protect natural and scenic resources," with an objective to identify "open spaces, scenic and historical areas and natural resources which should be preserved from urban development" (City of Heppner 2004).

Based on the specific content of the Comprehensive Plan, the Certificate Holder concludes that the City of Heppner has not identified any significant or important scenic resources for inclusion in this Exhibit.

3.3 Tribal Lands

There are no tribal lands located within the Analysis Area; therefore, this exhibit does not address any tribal land management plans.

3.4 Federal Lands

This section reviews the federal land management plans that apply to lands within the Facility's Analysis Area, as listed in Table R-1. The plans pertain to several parcels of BLM-managed lands, the Oregon Trail and its significant sites, resources within the Boardman Bombing Range, and interpretation associated with the Blue Mountain National Scenic Byway.

3.4.1 BLM

There are multiple, small, scattered parcels of lands managed by the BLM located within the Analysis Area, primarily in Umatilla County. Two of these are inholdings within the Wheatridge East area. A third is located approximately 5 miles north of Wheatridge East; this approximately 300-acre parcel is managed as part of the Oregon Trail Area of Critical Environmental Concern (ACEC), also known as Echo Meadows. The Echo Meadows site is also a protected area as analyzed in Exhibit L of RFA 4. Four other parcels are located south of I-84 and west of OR-207. The locations of these BLM parcels are shown on Figure R-1.

The Federal Land Policy and Management Act of 1976 requires the BLM to protect the quality of scenic values on public lands (43 USC 1701). The BLM manages scenic resources on the federal lands under its jurisdiction through application of the Visual Resource Management (VRM) system. BLM-administered lands in Morrow, Umatilla, Union, and Baker counties are within the Baker Resource Area of the Vale District; the current Resource Management Plan (RMP) for the Baker Resource Area was adopted in 1989 (BLM 1989). The RMP assigns the lands within the Baker area of the district to 14 geographic areas or planning units; Echo Meadows is within the Oregon Trail planning unit, and the two inholdings are managed as part of the Blue Mountain planning unit.

The RMP assigns VRM classifications to all BLM lands within its scope; lands are placed within VRM Classes I, II, III or IV depending on their existing visual quality and the management objectives relative to the amount of visual change that would be allowed to occur within those lands. All lands within the Oregon Trail planning unit, including the Oregon Trail ACEC, are assigned to VRM Class III. The specific VRM classification for the two inholdings is unclear; however, it can be confirmed that neither is assigned to VRM Class I or II[2].

The Certificate Holder understands that ODOE considers BLM-administered lands managed as VRM Class I and II to be important scenic resources, based on the level of visual resource protection afforded to those lands. Based on the assignment of the BLM-managed lands within the Analysis Area to VRM Class III or IV, the Certificate Holder concludes that there are no scenic resources identified as significant or important by the BLM's Baker RMP for inclusion in this Exhibit.

[2] Geographic Information System data obtained from BLM does not include VRM classifications for most of the northern half of the Vale District. The two inholdings are managed as part of the Blue Mountain planning unit. The Baker Resource Area RMP indicates that there are no areas within the Blue Mountain planning unit that are assigned to VRM Class I. Map 5 of the RMP identifies "areas of high visual quality" which are assigned to VRM Class II; none of these areas coincide with the location of the two inholding parcels. Because they are definitively not assigned to VRM Class I or II, the inholding parcels are managed either as VRM Class III or IV.

3.4.2 National Park Service

The Analysis Area includes a portion of the Oregon National Historic Trail (ONHT), which received federal designation as a "historic trail" under the National Trails System Act (NTSA) in 1978. The purpose of the historic trail designation on federal lands is to protect the historic route and any associated artifacts. Specifically, the purpose is described in the NTSA as follows:

> *National historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment. Only those selected land and water based components of an historic trail which are on federally owned lands and which meet the national historic trail criteria established in this chapter are included as Federal protection components of a national historic trail….*

Thus, the NTSA and its related protections apply only to where the ONHT is on federal lands. In addition, the focus of the NTSA is on historic preservation, not management of scenic resources.

The NTSA indicates that specific locations along a historic trail can be identified as "high-potential" sites or trail segments. High-potential sites and trail segments are described as those locations that provide an opportunity to interpret the historic significance of the trail during its major use. As identified in the Comprehensive Management and Use Plan – Oregon National Historic Trail and Mormon Pioneer National Historic Trail (CMP; NPS 1999), The portion of the ONHT within the Analysis Area includes two high-potential sites, Echo Meadows and the Well Spring Interpretive Site, as well as a portion of the 12 mile-long high-potential trail segment that passes through the southern end of the Boardman Bombing Range (Figure R-1). Echo Meadows is managed by the BLM as part of the Oregon Trail ACEC. The Well Spring Interpretive Site is located along the southern boundary of the Boardman Bombing Range.

The CMP was developed to comply with the requirements of the NHTA and to manage preservation of the ONHT. The CMP explains that the purposes of the ONHT are "to identify, preserve, and interpret sites, route, and history of the Oregon Trail" and "to commemorate the westward movement of emigrants to the Oregon country as an important chapter of our national heritage." Thus, the ONHT is managed for historical significance and not primarily as a scenic resource. The CMP's focus on the historic significance of the ONHT and not management of scenic resources is consistent with Energy Facility Siting Council findings in Section IV.3(d) of the Final Order on the Shepherds Flat Wind Farm, dated July 25, 2008. The scenic value connected with the ONHT is focused on the view of visible trail remnants and ruts, along with their immediate surroundings. Therefore, the high-potential sites and segment of the ONHT identified in the CMP and located in the Analysis Area are significant or important historic resources but are not specifically identified as scenic resources (NPS 1999).

Although the Oregon Trail high-potential trail segment and the two high-potential sites are important historic resources, they are neither considered nor managed as significant or important scenic resources. However, the Certificate Holder provides an analysis in Section 4 to demonstrate that the Facility will have limited impacts on the views from these locations.

3.4.3 Department of Defense

Literature search activities conducted for the Facility's scenic resource assessment indicate the U.S. Navy has not prepared an overall land or resource management plan for the Naval Weapons Training Facility Boardman (formerly the Boardman Bombing Range). The Navy has developed an Integrated Natural Resources Management Plan for the Facility (U.S. Navy 2012). This plan addresses wildlife and plant species and their habitats but does not address scenery or other non-ecological natural resources. Similarly, the Navy has also developed an Integrated Cultural Resources Management Plan for the Facility (U.S. Navy 2012). This plan addresses historic and archaeological resources; however, it does not address scenery or other non-cultural aspects of the human environment.

Based on the plans for the Naval Weapons Training Facility Boardman, the Certificate Holder concludes that the Navy does not identify any scenic resources as significant or important for inclusion in this Exhibit.

3.4.4 U.S. Forest Service

Although it is a designated state (not federal) scenic byway, the only "management plan" for this byway is the Blue Mountain Scenic Byway Interpretive Guide (USFS 1993), prepared by the U.S. Forest Service, Umatilla National Forest (a significant portion of the route is along USFS roads). This management plan is focused on means to enhance wayfinding and visitor experience in the many towns along the byway route, which includes OR-74 within the Analysis Area. It is not a land management plan, a transportation plan or a highway management plan, but is instead a plan for enhancing tourism. The plan does not grant or imply authority for land management outside of the Umatilla National Forest, which is outside of the Analysis Area.

The plan identifies a few specific views such as views of the Blue Mountains from a particular highway turnout; however, none of the identified viewpoints are located within the Facility Analysis Area. No specific scenic resources are identified in the area where the Facility would be near to, or potentially visible from, OR-74. Therefore, this plan does not identify any significant or important scenic resources for the purposes of this analysis. Although not included in the scenic resources analysis of this Exhibit, the Blue Mountain Scenic Byway is addressed as a recreation resource in Exhibit T.

4.0 Impact Assessment – OAR 345-021-0010(1)(r)(C)

OAR 345-021-0010(1)(r)(C) A description of significant potential adverse impacts to the scenic resources identified in (B), including, but not limited to, impacts such as:

(i) Loss of vegetation or alteration of the landscape as a result of construction or operation; and

(ii) Visual impacts of facility structures or plumes.

4.1 Impacts to Important Scenic Resources

As stated in Section 3, no scenic resources within the Analysis Area have been identified as significant or important by any land use plan applicable to the Analysis Area. Therefore, the Facility would have no impacts on any important scenic resources.

4.2 Supplemental Visual Impact Assessment

Although it has been determined that applicable land use plans do not identify significant or important scenic resources within the Analysis Area, the Certificate Holder acknowledges that there may be public concern over visual aspects of the Facility. To address that concern, the following section provides a review of existing visual resource conditions in the area surrounding the Facility and the potential changes to those conditions with the Facility as modified by RFA 4. The analysis methodology used for this Exhibit builds on that used by the Council as the basis for its findings in the Final Order (ODOE 2017).

4.2.1 Visual Assessment Overview

Solar panels are the dominant visual element of a solar array. Ancillary Facility components, such as overhead collector lines and skid-mounted inverters and transformers are features that, by themselves, would not be extraordinary features in the landscape and would not present the same level of visual contrast as an array of solar panels. Therefore, the visual assessment is primarily an analysis of solar panel visibility and impact, unless otherwise noted.

The supplemental visual impact assessment involved identifying the areas from which the proposed Facility solar arrays might be visible, and the expected effect of solar array visibility on the existing visual setting. This assessment was based on a zone of visual influence (ZVI) analysis (also known as visibility or viewshed analysis), using ESRI ArcGIS software, to assess the visibility of the solar facilities. The ZVI analysis employed a 10-meter digital elevation model to represent the terrain within the Analysis Area. The ArcGIS software generated lines of sight from the three-dimensional coordinates of the solar facilities to points on the terrain surface, thereby identifying locations from which the solar facilities would potentially be visible. The bare-earth modeling approach used in the ZVI analysis, based only on the effects of terrain on visibility, results in a conservative assessment of potential visibility. A bare-earth analysis does not account for vegetation or buildings, which in practice would block or screen views in some places. In addition, the ZVI model does not account for distance, lighting, and atmospheric factors (such as weather) that diminish visibility under actual field conditions. The results of the ZVI analysis were used to address visual effects from potentially sensitive viewing locations within the Analysis Area.

4.2.2 Solar Array Visibility Characteristics

The proposed solar array is designed to generate power through the absorption of sunlight, resulting in limited reflectivity (glare) that may be visible in some locations within the scenic resources Analysis Area. Viewed at a distance from a similar elevation, the limited reflectivity of the

solar modules would contribute to an overall appearance of a dark line on the horizon. From closer-in views, modules in the solar array would be discernible but they are unlikely to be substantial sources of glint or glare.

The solar modules will be mounted on a tracking system that rotates the modules throughout the day as the sun's angle changes. The movement of the modules, combined with their antireflective coating, would minimize glare. Modern solar modules use a sophisticated antireflective coating to nearly eliminate the reflection of sunlight off the module face. A typical human eye reacts to light wavelengths from 390 to 700 nanometers; in that spectrum, the antireflective-coated glass on a typical module will have a high transmittance level of at least 90 percent. Transmittance is the percent of radiation (light) that travels through a surface. Such a high level of transmittance is important because it means that more light is traveling through the glass and onto the photovoltaic cells, rather than reflecting off the surface. Because the solar modules have transmittance values higher than a body of water or a glass window without an antireflective coating, the potential for them to cause glare is lower compared to these other surfaces. Based on systematic observations of solar facilities in the American Southwest, researchers from the Argonne National Laboratory (Sullivan et al., n.d.) found that thin-film photovoltaic facilities "…were not observed to generate glare."

The surfaces of other Facility components, such as the O&M building and inverter boxes, will be treated to reduce potential visibility and reflectivity through use of dulled finishes in colors selected to blend into the backdrop.

4.2.3 Visibility from Selected Reference Locations

The results of the ZVI analysis are presented in Figure R-2. Because of the low profile of the solar arrays and the terrain conditions in the area, the solar arrays would be blocked from view at most locations within the Analysis Area. Locations of potential visibility of any part of the solar arrays are concentrated in the western part of the Analysis Area, primarily within a radius of approximately 2 to 3 miles of the Amended Site Boundary. Patches of potential visibility are also located at greater distances to the southeast, west, and northwest of the solar facility. The following discussion summarizes expected visibility and potential visual impacts for selected locations within the Analysis Area that have not been identified as important scenic resources, but represent resources that may have a degree of sensitivity from a viewer perspective.

4.2.3.1 Oregon National Historic Trail

Congress designated the route of the Oregon Trail as a National Historic Trail in 1978, and the Oregon Historic Trails Advisory Committee was created to provide public input and advice to the NPS on management of historic trails in Oregon. The National Historic Trail designation applies to a general, primary route (and two specified branches) extending approximately 2,000 miles from Independence, Missouri to Oregon City, Oregon. The Oregon Trail designation was intended to preserve the legacy of the westward immigration of settlers to the Oregon Territory, based on routes used from 1841 to 1848 (NPS 1999). In recognition of the intermittent evidence of many of

the historic trail routes, the National Trails System Act provided for the identification of "high-potential sites and segments" along these routes, using specified criteria for historic significance, the presence of visible historic remnants, scenic quality, and relative freedom from intrusion. High-potential segments are portions of a trail route that afford high-quality recreational experiences in areas that have greater than average scenic values or afford the opportunity to vicariously share the experience of the original trail users, while high-potential sites are specific locations with similar attributes. Each site or segment must have the potential to interpret the trail's historical significance and to provide opportunities for high-quality recreation.

The NPS (1999) management plan identifies a 12-mile Boardman Segment of the trail in Morrow County as a high-potential trail segment. This trail segment extends from the eastern edge of the Boardman Bombing Range in a southwest direction to Immigrant Lane and then parallels the road to the western edge of the Boardman Bombing Range and continues to the west. Physical evidence of the trail, i.e. wagon ruts, is still present in much of this 12-mile corridor. However, approximately 7 miles of this segment are within the Boardman Bombing Range and inaccessible to the public except for a small area surrounding the Well Spring site (see Section 4.2.3.2 below); the remainder of the high-potential segment is on private lands to the west of the Bombing Range (most of which is managed by The Nature Conservancy as part of the Boardman Conservation Area) and is also not open to the public.

As previously found by the Council, the overall visual impact of the Facility on the Oregon Trail would be negligible because there are virtually no viewers to be affected and the existing viewshed contains wind turbines and other industrial infrastructure (ODOE 2017). The updated visibility analysis for the proposed solar arrays demonstrates potential visibility along approximately 2 miles of the high-potential Oregon Trail segment within the Boardman Bombing Range. Given that the distance from the closest solar array is approximately 4.5 miles, it is questionable whether any of the solar arrays would be noticeable to a potential viewer. If a part of the Facility were visible, the visual impact would be negligible because this portion of the high-potential trail segment is not accessible to the general public and existing wind turbines and other industrial infrastructure would dominate any visual contrast that might be created by the Facility as modified under RFA 4.

4.2.3.2 Oregon Trail Well Spring Interpretive Site

The Oregon Trail Well Spring Interpretive Site is located on Immigrant Lane adjacent to the southern boundary of the Boardman Bombing Range. This site was identified by the NPS as a high-potential site along the Oregon Trail. The site includes an information kiosk located on the south side of the road that seems to be oriented to the south, although most of the trail-related interest (e.g., visible wagon ruts) is located to the north within the Bombing Range, in an area not accessible to the public.

The site is managed to maintain the history and historic artifacts associated with the Oregon Trail, rather than for its scenic qualities; there is no management direction for preservation of views or scenic quality related to the lands on which the Facility is located. Although the relatively undeveloped viewshed is said to provide an experience that enables visitors to relate to the

emigrants, the viewshed is no longer in the nearly pristine condition that it was during the emigrants' time. The road is evident, much of the landscape is farmed and fenced, little of the tallgrass native prairie remains, and the turbines of existing wind facilities are visible to the east and west.

The visibility analysis indicates that the solar arrays would not be visible from the Well Spring site, which is approximately 5 miles northwest of the Amended Site Boundary. The elevation difference between the Well Spring site and the Facility is 161 feet (with the Facility being higher in elevation) with several draws and large hills in between. Therefore, the arrays, with a maximum height of 16 feet, will be blocked from view at the lower-elevation Well Spring site. The remaining evidence of the Oregon Trail at the Well Spring site would not be disturbed by the Facility, allowing visitors to continue their enjoyment of the history of the site.

4.2.3.3 Oregon Trail ACEC Echo Meadows Site

The Echo Meadows interpretive site along the Oregon Trail is located a short distance north of Oregon Trail Road (also known as the Lexington-Echo Highway or OR-320), in an isolated parcel of BLM land within the Oregon Trail ACEC. The site is approximately 2.3 miles north of Wheatridge East and about 15.5 miles northeast of the Amended Site Boundary. The visibility analysis indicates that the solar arrays would not be visible from the Echo Meadows site, and there would be no additional visual impact from the Facility at this location.

4.2.3.4 Local Communities

Exhibit R of the original ASC addressed visibility of the approved Facility from nearby communities (Wheatridge 2015). As indicated in Table R-1 and Section 3.2, six municipalities are located at least partially within the Analysis Area. They are the cities of Lexington, Echo, Ione, Hermiston, Stanfield, and Heppner. The ZVI analysis indicates that the solar facilities would not be visible from any of these communities (see Figure R-2). Therefore, there would be no additional visual impact from the Facility as modified under RFA 4 at the local communities near the Facility.

5.0 Avoidance and Mitigation – OAR 345-021-0010(1)(r)(D)

> *OAR 345-021-0010(1)(r)(D) The measures the applicant proposes to avoid, reduce or otherwise mitigate any significant adverse impacts.*

As described Section 4, the Facility will have no impact on any important scenic resources in the Analysis Area. In addition, a supplemental visual analysis determined that the Facility as modified under RFA 4 would not result in adverse visual impacts at selected locations that may be considered sensitive viewing areas. Consequently, no mitigation measures for scenic resources are proposed.

6.0 Monitoring – OAR 345-021-0010(1)(r)(F)

OAR 345-021-0010(1)(r)(F) The applicant's proposed monitoring program, if any, for impacts to scenic resources.

Monitoring for visual impacts is not proposed. Unlike some other types of impacts, such as potential impacts to biological resources, visual impacts typically do not change over time. Therefore, monitoring for visual impacts would not provide meaningful information.

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Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure R-1 Analysis Area for Scenic Resources

MORROW AND UMATILLA COUNTIES, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (10-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- County Boundary
- Bureau of Land Managment (BLM)
- Boardman Bombing Range
- Oregon Trail Route

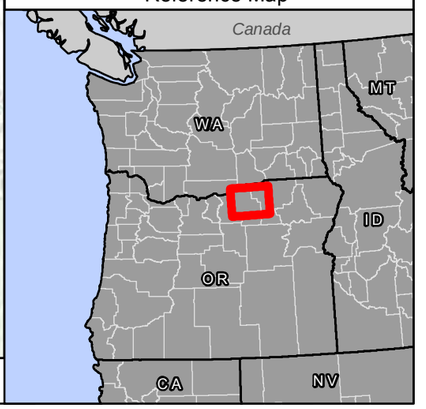
Oregon Trail Interpretive Site

- Echo Meadows
- Well Spring
- Fourmile Canyon

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



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Wheatridge Wind Energy Facility Request for Amendment 4

Figure R-2 Viewshed Analysis for Solar Facility

MORROW AND UMATILLA COUNTIES, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (10-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- County Boundary
- Bureau of Land Managment (BLM)
- Boardman Bombing Range
- Oregon Trail Route

Oregon Trail Interpretive Site

- Echo Meadows
- Well Spring
- Fourmile Canyon

Solar Facility Viewshed Analysis

- Not Visible
- Potentially Visible

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

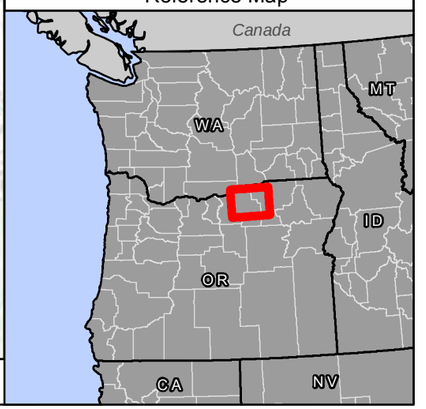

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Exhibit S

Historic, Cultural, and Archaeological Resources

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit S will be completed as part of a supplemental submittal.

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Exhibit T

Recreation

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
Council	Energy Facility Siting Council
Certificate Holder	Wheatridge Wind Energy, LLC
dBA	decibel
Facility	Wheatridge Wind Energy Facility
MW	megawatts
NPS	National Park Service
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
OPRD	Oregon Parks and Recreation Department
OR-74	Oregon State Highway 74
RFA 4	Request for Amendment 4
ZVI	Zone of visual influence

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1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit T contains information pertaining to potential adverse impacts of construction and operation for the Facility on important recreational opportunities, as required to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(t) paragraphs (A) through (E). This Exhibit demonstrates that the Facility can comply with the approval requirements found in OAR 345-022-0100:

> *(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of a facility, taking into account mitigation, are not likely to result in a significant adverse impact to important recreational opportunities in the analysis area as described in the project order. The Council shall consider the following factors in judging the importance of a recreational opportunity:*

[1] Per OAR 345-001-0010(32) "Micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

(a) Any special designation or management of the location;

(b) The degree of demand;

(c) Outstanding or unusual qualities;

(d) Availability or rareness; and

(e) Irreplaceability or irretrievability of the opportunity.

(2) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

2.0 Recreational Opportunities in the Analysis Area – OAR 345-021-0010(1)(t)(A)(D)

OAR 345-021-0010(1)(t) Information about the impacts the proposed facility would have on important recreational opportunities in the analysis area, providing evidence to support a finding by the Council as required by OAR 345-022-0100, including:

OAR 345-021-0010(1)(t)(A) A description of the recreational opportunities in the analysis area that includes information on the factors listed in OAR 345-022-0100(1) as a basis for identifying important recreational opportunities.

OAR 345-021-0010(1)(t)(D) A map of the analysis area showing the locations of important recreational opportunities identified in (A).

OAR 345-001-0010(59)(d) defines the Analysis Area for recreational resources as the area within and extending five miles from the Site Boundary. The Site Boundary consists of the Approved Site Boundary and the Amended Site Boundary, and is defined in detail in Exhibits B and C. As previously found by the Council, the design, construction and operation of the facility are not likely to result in a significant adverse impact to any important recreational opportunities in the Analysis Area (ODOE 2017). No new recreational areas are located within the Analysis Area since the Site Certificate was issued. Although RFA 4 proposes an expansion to the Site Boundary to accommodate the solar arrays, the Analysis Area for recreational resources is the same as previously analyzed because the Amended Site Boundary is interior to the Approved Site Boundary. The Recreational Analysis Area is shown on Figure T-1 and an inventory of the recreational opportunities within the Analysis Area is included as Attachment T-1.

2.1 Inventory Methods

Recreational opportunities within the Analysis Area were identified through collection and review of existing information available from desktop research sources, including the following types of sources:

- Published maps with geographic coverage applicable to the Analysis Area. Specific sources included US Geological Survey 1:100,000 scale and 1:24,000 scale topographic maps; maps published by land management agencies, primarily the Bureau of Land Management (BLM); and the Oregon Atlas and Gazetteer (DeLorme 2017), which includes topographic maps and data on a wide variety of recreational opportunities.
- Geographic Information System files documenting recreational resources obtained from key recreation provider agencies, including BLM (BLM 2018), Oregon Parks and Recreation Department (OPRD; OPRD 2017), and Oregon Department of Fish and Wildlife (ODFW; ODFW 2016).
- Land management agency planning documents.
- Comprehensive plans, park and recreation plans, and individual park master plans prepared by OPRD and by counties and municipal governments within the Analysis Area.
- Internet sites maintained by recreation provider agencies, including OPRD and county and city park departments.
- Internet sites maintained by various commercial entities, including sites providing general recreation and tourism information and sites applicable to specific private-sector recreational opportunities (ORBIC 2015).

2.2 Summary of Recreational Opportunities

In general, recreation activities in the Analysis Area consist of hiking, fishing, boating, camping, bicycling, photography, game and bird hunting, and sightseeing. These activities also occur in numerous locations outside the Analysis Area, and therefore some of the recreational opportunities identified within the Analysis Area do not rise to the level of uniqueness or irreplaceability that is required by OAR 345-022-0100(1).

There are 15 identified recreational opportunities within the Analysis Area. These include the Morrow County Fairgrounds, several parks managed by the City of Heppner, Willow Creek Reservoir and the adjacent Willow Creek RV Park, the Blue Mountain Scenic Byway, a portion of the Oregon Trail, a golf course open to the public, and several areas open to the public for hunting. As noted above, none of these recreational areas are new and all were previously assessed by Council as described in the Final Order on the ASC (ODOE 2017). However, two of the recreational opportunities within the Analysis Area are within five miles of the Amended Site Boundary, as proposed by RFA 4. These include a portion of the Oregon Trail and the Well Springs Interpretive Site for the trail.

Recreational opportunities within the Analysis Area are described below in order of federal, state, local and private ownership/management. Attachment T-1 provides a summary of each identified recreational opportunity, and an assessment of the importance of each opportunity. Figure T-1 shows the location of the recreation opportunities identified in the Analysis Area.

2.2.1 Federal

The National Park Service (NPS), in conjunction with the Oregon Historic Trails Advisory Committee, manages the remaining segments and important sites of the Oregon National Historic Trail. The trail route passes about 1.2 miles north of Wheatridge West (4.5 miles northwest of the proposed solar area) and 2.9 miles north of Wheatridge East. The Well Spring Interpretive Site and the Echo Meadows Interpretive Site are two high-potential sites located within the Analysis Area. Due to its rareness and historic importance, the Oregon Trail and Well Spring and Echo Meadows sites are considered important recreational resources. The Echo Meadows site is managed by the BLM as an Area of Critical Environmental Concern (ACEC); as such it is also considered a protected area for the analysis in Exhibit L of this application.

The U.S. Army Corps of Engineers constructed and manages the Willow Creek Dam and the impounded Willow Creek Reservoir. A baseball field is located near the foot of the dam on U.S. Army Corps of Engineers' property. The dam and lake were constructed primarily for flood control; secondary uses include providing irrigation water and recreational use – fishing and boating. Water quality in the reservoir has been an ongoing problem, sometimes limiting the availability of the reservoir for recreational use. The baseball field is one of four in Heppner.

The BLM Prineville District manages two parcels within the Analysis Area (in addition to the Echo Meadows parcel discussed above); neither parcel contains a designated recreation area nor is considered to be a recreational resource.

There are no other federal lands or lands managed by a federal agency within the Analysis Area. Only a portion of the Oregon Trail within the Boardman Bombing Range and the Well Spring Interpretive Site for the trail are within five miles of the Amended Site Boundary.

2.2.2 State

There are no lands owned or managed by the State of Oregon within the Analysis Area except for state highway rights-of-way. Within the Analysis Area, Oregon State Highway 74 (OR-74) is designated as a part of the route of the Blue Mountains Scenic Byway. As a result of the designation OR-74 is considered an important recreation resource, inviting travelers from afar and providing an economic boost to towns along the route. This scenic byway is further than five miles from the Amended Site Boundary.

2.2.3 Local Governments and Special Districts

Counties, cities, and special districts provide a number of recreation opportunities within the Analysis Area. Local government resources tend to be smaller-scale parks with an emphasis on day-use activities and typically serve more localized user populations. Local government recreation providers within the Analysis Area include the following:

- Morrow and Umatilla counties; and

- Cities of Heppner and Lexington.

Morrow County (2011) operates one recreational facility in the Analysis Area, the Morrow County Fairgrounds in Heppner. The County Fair and other agricultural- and ranching-related events that take place at the fairgrounds form an important part of community life in Morrow County. Because of its role in community life and the rare nature of county fairgrounds, this is considered an important recreation resource.

Four parks owned and managed by the City of Heppner are located in the Analysis Area: Hager Park, Heritage Park, Heppner City Park, and the Willow Creek Water Park. Hager Park and Heppner City Park both have some recreational facilities (playgrounds), restrooms and usable open space. Heritage Park is primarily dedicated to history with several displays of antique farming equipment and informational signs, but no recreational facilities. These parks primarily serve the residents of Heppner, as do many other small parks in other towns and cities in the region. The Willow Creek Water Park is one of a few public pools in the region; due to its relative scarcity it is considered an important recreation resource.

The Willow Creek RV Park is operated by a small group of Morrow County residents calling themselves the Willow Creek Park District. The 24-space Willow Creek RV Park is built into the side of a gently sloping hill above the Willow Creek Reservoir, on the southeastern outskirts of Heppner. It is a fairly typical small RV park; most spaces have electricity, and some have full utility hookups, there are picnic tables, grills, restrooms and pay showers but little landscaping, and an undetermined number of tent spaces. It overlooks Willow Creek Reservoir, and offers swimming, boating, hiking and wildlife viewing. The campground is open March 15th through December 1st.

None of the recreational facilities owned by local governments or special districts are within five miles of the Amended Site Boundary.

2.2.4 Private

Four privately-owned recreational opportunities (not including the Willow Creek RV Park, which appears to be a private resource) have been identified within the Analysis Area. These recreation facilities were included in the ASC because, although they are privately owned, they are open to the public. These private opportunities include three hunting areas and the Willow Creek Country Club and golf course.

Hunting is an important recreational and subsistence activity in eastern Oregon. ODFW's Access and Hunting Program facilitates the use of private lands for hunting by the public; available sites are identified on ODFW's online map (ODFW 2014). There is one property within the Analysis Area, the Bunker Hill Access Area, that is designated as open to hunting by permission under ODFW's Access and Habitat Program; it is located south of OR-74, approximately 4 miles northwest of Heppner. Under this designation, hunters must contact the landowner for permission prior to entering the area to hunt, as well as obtain a daily permit from the self-serve box at the site entrance. In addition, the Social Ridge Access Area is designated as "Welcome to Hunt" under

ODFW's Access and Habitat Program. Hunters using this area must obtain a daily hunting permit from the self-serve permit box at the entrance but do not need specific landowner permission.

Several privately owned and operated hunting and birding clubs are found in the region, but only one is within the Analysis Area: Rolling Hills Bird Hunting's Harrison Preserve, located south of OR-74 between Lexington and Ione. The owners of Rolling Hills Bird Hunting raise grouse and other game birds for release and hunting on the Harrison Preserve and two other large ranch properties located southeast of Heppner, outside the Analysis Area. Access is strictly controlled to one party, typically four to five people, per day during the hunting seasons.

The Willow Creek Country Club is a private, nonprofit social club located near the western outskirts of Heppner. While the club is private, the golf course is open to the public with greens fees. Facilities and amenities are few but include cart and club rental. The 9-hole course is rated below average difficulty by the United States Golf Association.

None of the privately owned recreational areas are within five miles of the Amended Site Boundary.

2.3 Importance Criteria

Recreational opportunities identified within the Analysis Area were evaluated for "importance" based on the criteria outlined in OAR 345-022-0100. A recreational opportunity may be determined to be important based on assessment of available information specific to each criterion, and a qualitative balancing of the attributes for all five criteria for a given resource. Specific considerations used to characterize the importance of a recreational opportunity relative to the five criteria outlined in OAR 345-022-0100 are summarized as follows:

1. *Any special designation or management of the location;*

There are distinct, identifiable differences among the types of special management designations that apply to lands within the Analysis Area, and their associated implications for resource protection. Wilderness designation, for example, results in management direction to preserve the resource values of the designated area and represents a high level of protection. Other types of designations allow much more latitude in undertaking management activities and involve a lower degree of resource protection. The source of the special designation is also a relevant consideration; a designation established through an act of Congress clearly carries more weight than an administrative designation applied by a resource management agency.

2. *The degree of demand;*

Qualitative ratings of High, Moderate, and Low were used as proxy measures for the level of demand for a specific recreational opportunity.

3. *Outstanding or unusual qualities;*

Identification of characteristics that might be considered outstanding or unusual for a given opportunity is a highly subjective task, as there is a wide variation in the values, tastes, and perceptions among the recreational public. The standard does not specify what qualities would define an opportunity as "outstanding" or "unusual," or indicate how those characteristics could be

measured. Some sites or areas have attributes that qualify them as "unique" (i.e., one of a kind), while others have qualities that are not unique, but intuitively set them apart from other opportunities and could be considered outstanding or unusual.

4. Availability or rareness; and

Qualitative ratings of Rare, Uncommon, and Common were used to address the criterion based on the apparent rareness of an opportunity. Consideration of this rareness attribute was based on the approximate set of comparable opportunities (and the geographic scale appropriate to each type of opportunity) available within the region surrounding the Facility.

5. Irreplaceability or irretrievability of the opportunity.

Ratings of Irreplaceable, Somewhat Irreplaceable, and Replaceable were used to address the criterion based on the ability to replace an opportunity. In general, opportunities based on inherent natural resource characteristics that could not feasibly be recreated in the same place or at another reasonably nearby location were considered Irreplaceable. By contrast, most opportunities that are based on constructed recreational facilities or infrastructure (such as typical campgrounds) could feasibly be replaced and were considered Replaceable.

The assessment of the overall importance for each identified recreational opportunity occurred on a case-by-case basis. Attachment T-1 provides a summary of each identified recreational opportunity in the Analysis Area, describes the characteristics of the opportunity relative to the importance criteria, and indicates which opportunities are considered important for the purposes of this Exhibit. A description of each recreational opportunity appears in the following section.

2.4 Importance Assessment Summary

Based on the importance criteria described above, six of the identified recreation resources have been determined to be important for the purposes of this Exhibit. These are:

- The high-potential segment of the Oregon National Historic Trail and the two high-potential sites, the Well Spring Interpretive Site and Oregon Trail ACEC Echo Meadows Interpretive Site;
- The Blue Mountain Scenic Byway;
- The Morrow County Fairgrounds; and
- The Willow Creek Water Park.

These resources were described in the ASC and are summarized in Attachment T-1 of this Exhibit. The potential for impacts to the important recreation resources as a result of the proposed solar facilities is discussed in Section 3.

3.0 Impact Assessment – OAR 345-021-0010(1)(t)(B)

OAR 345-021-0010(1)(t)(B) A description of any significant potential adverse impacts to the important opportunities identified in (A) including, but not limited to:

The potential effects to important recreational opportunities in the Analysis Area were studied to determine whether the Facility's design, construction, and operation, when taking into account mitigation, would be likely to result in any significant adverse impacts. The following sections summarize the types of potential adverse impacts evaluated and provide summaries of the analysis.

3.1 Direct or Indirect Loss of Recreational Opportunities – OAR 345-021-0010(1)(t)(B)(i)

(i) Direct or indirect loss of a recreational opportunity as a result of facility construction or operation.

For a direct loss of opportunity to occur, the Facility would need to physically disturb the ground located within the affected recreational resource area. The Facility as modified by RFA 4 would not directly impact any identified recreation resource.

An indirect loss of opportunity could occur if 1) a recreational opportunity nearby the Facility would not be physically disturbed by construction activity but might need to be temporarily closed to public use in response to safety concerns; or 2) if development of the Facility were to so alter the environment of a recreational opportunity through indirect effects that it substantially adversely impacted the quality of the recreation experience at that site. For example, if the Facility were to destroy intact evidence of the Oregon Trail in view of an interpretive site (which it does not), it could render the site meaningless in terms of its historic importance and value as a tourism resource.

Because all of the important recreation resources in the Analysis Area are located farther than one mile from the Site Boundary, indirect loss of opportunity for safety concerns is unlikely to occur. The indirect effects of the Facility, including traffic, noise, and visual impacts, are similarly unlikely to substantially impact any important recreation resource such that the resource would be considered lost.

Potential sources of indirect disturbance impacts to important recreational opportunities include noise, traffic, and changes in visual quality associated with the Facility.

3.2 Facility Noise – OAR 345-021-0010(1)(t)(B)(ii)

(ii) Noise resulting from facility construction or operation.

Exhibit X provides an assessment of the existing acoustical environment and anticipated Facility sound levels. Exhibit X describes sound level thresholds derived from the Oregon Department of Environmental Quality noise regulations (OAR 340-035-0035), which are used to assess the significance of impacts to noise sensitive properties. As defined in OAR 340-035-0035, "noise

sensitive properties" are "real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities is not Noise Sensitive Property unless it meets the above criteria in more than an incidental manner."

The Council previously found that the noise generated by the construction and operation of the approved Facility is not likely to result in significant adverse noise impacts to any of the recreational opportunities identified as "important" (ODOE 2017). As described in Exhibit X for RFA 4, operation of the solar arrays and related or supporting facilities will not create noise that is measurably different from what was previously analyzed, and therefore will not result in new impacts to important recreational opportunities. For both the Oregon Trail portion that runs through the southern end of the Boardman Bombing Range and the Oregon Trail Well Spring Interpretive Site, the noise levels would be indistinguishable from background noise.

Noise generating activities during construction could result from the use of heavy machinery, such as heavy trucks, bulldozers, graders and cranes. At this time, pending geo-technical investigation of the final layout, blasting is not anticipated to be required for Facility construction. Noise from construction may be audible at the Well Spring site and the high-potential Oregon Trail segment; Facility noise levels along the trail would peak at the Well Spring site, the nearest point of the trail to the Facility. Pursuant to OAR 340-035-0035(5), noise from construction activities is exempt from the state noise standards.

3.3 Traffic – OAR 345-021-0010(1)(t)(B)(iii)

(iii) Increased traffic resulting from facility construction or operation.

OAR 345-021-0010(1)(t) requires consideration of impacts to recreational resources from Facility-related traffic that could occur during construction or operation. Exhibit U provides information on construction traffic levels and typical travel routes for Facility truck and construction worker traffic. Based on the analysis provided in Exhibit U, construction traffic resulting from construction of the solar arrays proposed in RFA 4 will be similar to or less than traffic already evaluated for the approved Facility. Therefore, the construction traffic is not anticipated to result in a reduction of Level of Service on any roads that provide access to the important recreational resources identified in this Exhibit. However, some roads near some recreational opportunities would experience higher traffic levels during construction, and visitor travel to some areas may be disrupted or delayed for brief periods due to delivery of Facility materials or construction equipment.

As previously found by the Council, the traffic generated by the construction and operation of the facility is not likely to result in significant adverse impacts to any of the recreational opportunities identified as "important" (ODOE 2017). Delays are most likely to occur only during deliveries of oversized loads, which will occur sporadically and will be accompanied by traffic control teams. These impacts would be intermittent and temporary, and traffic levels would return to normal following construction.

The only recreation site for which a temporary traffic impact is likely is the Oregon Trail Well Spring Interpretive Site because it is accessed by roads that would also carry Facility construction

traffic. Access to the Well Spring Interpretive Site from the east most likely involves travel on Oregon State Highway 207 and/or Bombing Range Road and Little Juniper Canyon Road; all of these will carry Facility construction traffic. The Well Spring Interpretive Site can also be accessed from the west, via routes that would not carry Facility construction traffic, for example, from OR-74 via Immigrant Lane. Therefore, visitors to the Well Spring site would be able to use an alternative route that would not be affected by Facility construction traffic.

The traffic analysis in Exhibit U demonstrates that the Facility would not cause an appreciable reduction in Level of Service on any roads in the area. Recreational traffic tends to be dispersed throughout the day rather than concentrated with the peak hours and would generally coincide with Facility truck traffic rather than worker commuter traffic. During peak construction periods roads used for Facility construction traffic would see up to an estimated total of 5 to 10 truck trips per day. This level of traffic is significantly lower than the traffic levels estimated for the approved wind Facility. Therefore, the affected local roads would continue to function at a high level of service. The use of Little Juniper Canyon and other minor roads in the vicinity of the Well Spring site would be limited to a relatively brief period of time while the northern end of the west solar array is constructed. Due to the low visitor numbers to the Well Spring site, the likelihood of significant delays for visitors is very low.

Other important and identified recreation resources are accessed primarily by roads that would not carry substantial amounts of Facility construction traffic and are therefore unlikely to experience any traffic impacts. Again, temporary, short-term delays are most likely to occur only during deliveries of oversized loads such as turbine blades, which will occur sporadically and will be accompanied by traffic control teams.

The operational phase of the Facility would affect recreational opportunities only to the extent that operation and maintenance activities generate significant amounts of traffic. Typical operational traffic would be minimal, as the Facility would permanently employ only approximately 10 to 15 personnel. Larger amounts of traffic would be generated only if a turbine would need significant repairs or replacement. In that event, some roads would experience higher traffic levels, and visitor travel to some areas may be disrupted or delayed for brief periods during delivery of materials or equipment. However, these impacts would be rare, intermittent and temporary, and would not represent significant adverse impacts to any recreational resource in the area.

3.4 Visual – OAR 345-021-0010(1)(t)(B)(iv)

(iv) Visual impacts of facility structures or plumes.

3.4.1 Visual Impact Assessment Methodology

Visual impacts of the proposed Facility are primarily related to views of the solar arrays. Evaluation of potential visual impacts to recreational opportunities echoes the methodology described in Exhibits L and R.

The solar array components are described in further detail in Exhibit B. The solar panels will be the most visible components of the solar arrays and will consist of solar module strings, mounted on single-axis tracker systems. The visibility of the solar arrays will depend primarily on topographic or other view obstructions and the distance from the viewer to the solar arrays. With a maximum height of 16 feet, the arrays won't be visible from sites lower in elevation than the area on which the array is constructed. From sites that are similar in elevation to the arrays, viewers will see only a line on the horizon, and not individual solar panels. Depending on the viewing distance, viewers at sites higher in elevation may have views of the panels, especially if the view direction is toward the angle at which the panel is tilted toward the sun.

To the extent possible, reflectivity of the solar arrays will be minimized. Antireflective coating will be used to reduce glare and the surface of the panels will have high transmittance to increase the amount of light reaching the PV cells. With these methods, the panels will be less reflective than a natural water body or a coated glass surface that is not antireflective.

In evaluating the visual impacts, the Certificate Holder first determined whether the Facility would potentially be visible from each recreation resource area using digital bare-earth terrain modeling. The analysis began with a zone of visual influence (ZVI) analysis (also known as a viewshed or visibility analysis), using Environmental Systems Research Institute ArcGIS software, to identify the areas from which the proposed Facility solar panels, arrays might be visible. It should be noted that this "bare-earth" modeling approach, based only on the effects of terrain on visibility, results in a conservative assessment of potential visibility The model does not account for distance, lighting, weather, and atmospheric attenuation factors that diminish visibility under actual field conditions. A bare-earth analysis also does not account for the effects of vegetation or buildings, which will in practice block or screen views in some places. Figure T-2 shows the areas from which the solar arrays would potentially be visible.

3.4.2 Visual Impact Assessment Results

The results of the ZVI analysis are presented in Figure T-2. Because of the low profile of the solar arrays and the terrain conditions in the area, the solar facility would be blocked from view at most locations within the Analysis Area. Locations of potential visibility of any part of the solar facility are concentrated in the western part of the Analysis Area, primarily within a radius of approximately 2 to 3 miles of the arrays. Patches of potential visibility are also located at greater distances to the southeast, west and northwest of the solar facility.

The ZVI analysis demonstrates that the solar facilities would not be visible from the Oregon Trail ACEC Echo Meadows Interpretive Site, the Blue Mountain Scenic Byway, the Morrow County Fairgrounds, or the Willow Creek Water Park. The lack of visibility at these four important recreation resources is understandable and expected, given that they are all located at least 12 miles from the closest part of the proposed solar facilities.

Based on the results of the ZVI analysis, there would be potential visibility of some portions of the Facility's solar panels from some locations along the Oregon Trail Route within the Boardman

Bombing Range. Therefore, expected visual conditions for the two important recreation resources in this part of the Analysis Area are discussed below.

Potential visibility is one of several factors that comprise an assessment of visual impact to a recreation resource. Other factors to consider include the existing visual context, particularly other sources of visual contrast present within the view; the likely number and nature of visitors to a recreation area; and whether there is any management direction related to preservation of scenic quality, either within the recreation area or outside of it. Table T-1 provides a summary of the visual impact assessment for the important recreation resources in the Analysis Area that are within five miles of the Amended Site Boundary and are within or near areas of potential visibility.

3.4.2.1 Oregon National Historic Trail

Congress designated the route of the Oregon Trail as a National Historic Trail in 1978, and the Oregon Historic Trails Advisory Committee was created to provide public input and advice to the NPS on management of historic trails in Oregon. The National Historic Trail designation applies to a general, primary route (and two specified branches) extending approximately 2,000 miles from Independence, Missouri to Oregon City, Oregon. The Oregon Trail designation was intended to preserve the legacy of the westward immigration of settlers to the Oregon Territory, based on routes used from 1841 to 1848 (NPS 1999). In recognition of the intermittent evidence of many of the historic trail routes, the National Trails System Act provided for the identification of "high-potential sites and segments" along these routes, using specified criteria for historic significance, the presence of visible historic remnants, scenic quality, and relative freedom from intrusion. High-potential segments are portions of a trail route that afford high-quality recreational experiences in areas that have greater than average scenic values or afford the opportunity to vicariously share the experience of the original trail users, while high-potential sites are specific locations with similar attributes. Each site or segment must have the potential to interpret the trail's historical significance and to provide opportunities for high-quality recreation.

The NPS (1999) management plan identifies a 12-mile Boardman Segment of the trail in Morrow County as a high-potential trail segment. This trail segment extends from the eastern edge of the Boardman Bombing Range in a southwest direction to Immigrant Lane and then parallels to road to the western edge of the range and continues to the west. Physical evidence of the trail, i.e. wagon ruts, is still present in much of this 12-mile corridor. However, approximately 7 miles of this segment are within the Boardman Bombing Range and inaccessible to the public except for a small area surrounding the Well Spring site; the remainder of the high-potential segment is on private lands to the west of the Bombing Range (most of which is managed by The Nature Conservancy as part of the Boardman Conservation Area) and is also not open to the public. Due to the restricted access to this high-potential trail segment, it is questionable whether this should be considered an important resource for recreation; however, its federal protection status, irreplaceability, and historical importance qualify it as important for the purposes of this analysis.

As previously found by the Council, the overall visual impact of the Facility on the Oregon Trail would be negligible because there are virtually no viewers to be affected and the existing viewshed

contains wind turbines and other industrial infrastructure (ODOE 2017). The updated visibility analysis for the proposed solar arrays demonstrates potential visibility along approximately 2 miles of the high-potential Oregon Trail segment within the Boardman Bombing Range, which is not accessible to the public. Wind turbines from the approved facility were previously identified as potentially visible in the background from this area. The subject portion of the trail follows a northeast-southwest orientation and is located to the northeast of the Well Spring site. Given that the distance from the closest solar array is approximately 4.5 miles, it is questionable whether any of the solar facility would actually be noticeable to a viewer. If a part of the facility were visible, the visual impact would be negligible because this portion of the high-potential trail segment is not accessible to viewers and existing wind turbines and other industrial infrastructure would dominate any visual contrast that might be created by the solar facility. Most of the high-potential trail segment is within the Boardman Bombing Range and is off-limits to the public, except for a small area surrounding the Well Spring site that is not within an area of potential visibility. The remaining evidence of the Oregon Trail can be viewed from a few points along Immigrant Road, and the solar facility would not be visible from those viewpoints.

Although the high-potential Oregon Trail segment is an important historic resource, it is neither considered nor managed as a significant or important scenic resource. The management plans for the Bombing Range (U.S. Navy 2012a, U.S. Navy 2012b) do not address scenic resources; there is no management direction for preservation of views or scenic quality related to the lands on which the high-potential trail segment or the Facility are located. This segment of the Oregon Trail was nominated for listing in the National Register of Historic Places in 1978 by the US Navy, with a recommendation for a corridor extending "200 feet on each side of the Trail in order to preserve the historic appearance of the lands adjacent to the Trail, plus the stagecoach station site and the graveyard" (NPS 1978). The Facility would not affect the visual quality within that corridor or on lands surrounding the stagecoach station and graveyard site.

3.4.2.2 Oregon Trail Well Spring Interpretive Site

This high-potential Oregon Trail site is located on Immigrant Lane adjacent to the southern boundary of the Boardman Bombing Range, approximately 5 miles northwest of the Amended Site Boundary. Well Spring was an important emigrant water source and campsite. While the spring itself is now essentially dry, trail ruts, a graveyard, and the remains of a stage station can be found nearby (NPS 1999). Non-governmental organizations have installed several interpretive displays near the spring and trail location markers along the route in this area. The information kiosk is located on the south side of the road and seems to be oriented southward; however, most of the trail-related interest (e.g., visible wagon ruts) is located to the north within the Bombing Range, in a small portion of the Bombing Range that is accessible to the public. There are no facilities beyond the information kiosk. The Oregon-California Trail Association, Northwest Chapter estimates the level of visitation to this site to be similar to the Echo Meadows site, at about 550 to 650 visitors per year, assuming that people who visit one will often visit the other; however, no actual use numbers are available (personal communication between Thomas Kruger, Tetra Tech and Billy Symms, Chapter Preservation Officer and Jim Tomkins, Chapter President on March 11, 2015).

As previously found by the Council, significant adverse visual impacts from the Facility would not be expected at this important recreation opportunity (ODOE 2017). Updated visual impacts to the Well Spring Interpretive Site for the proposed solar arrays are analyzed in Exhibit R. Based on the updated visibility analysis, the solar arrays would not be visible from a distance of approximately 5 miles. The elevation difference between the site and the Facility is 161 feet (with the Facility being higher in elevation) with several draws and large hills in between. Therefore, the arrays with a maximum height of 16 feet will be blocked from view at the lower-elevation Well Spring site.

The Well Spring site is managed to maintain the history and historic artifacts associated with the Oregon Trail, rather than for its scenic qualities; there is no management direction for preservation of views or scenic quality related to the lands on which the site or the Facility are located. Although the relatively undeveloped viewshed is said to provide an experience that enables visitors to relate to the emigrants, the viewshed is no longer in the nearly pristine condition that it was during the emigrants' time. The road (Immigrant Lane) is evident, much of the visible landscape is farmed and fenced, little of the tallgrass native prairie remains and the turbines of existing wind farms are visible to the east and west. The Facility solar panels would not be visible to the southeast and would not influence views northward from the kiosk to the remaining evidence of the Trail within the Bombing Range. The remaining evidence of the Oregon Trail at the Well Spring site would not be disturbed by the Facility, allowing visitors to continue their enjoyment of the history of the site.

3.4.2.3 Summary of Visual Impacts

Due to the low profile and minimal reflectivity of the solar arrays and the distances between the recreation areas and the arrays, the arrays are expected to have limited or no visibility from the important recreational opportunities identified previously. Therefore, the addition of the solar array to the Facility will not result in a significant adverse visual impact to important recreational opportunities. As modified by RFA 4, the views from the Facility will continue to be dominated by wind turbines and other infrastructure.

3.5 Summary of Impacts

The Facility has been designed to avoid direct loss to all important and identified recreational opportunities (see Table T-1), and indirect disturbance effects would not lead to an indirect loss of any important or identified recreational opportunity. Due to their low visual profile, the solar arrays will have minimal visibility from any of the important recreational facilities within the Analysis Area.

Most identified recreation resources would experience virtually no impact from the Facility. They are located where they would not be affected by Facility traffic; they are too far away to hear operational noise; and they already have the turbines of existing wind farms in view and would have limited or no views of the Facility that would adversely affect the visitor experience. The Well Spring site would not receive Facility operational noise beyond the levels previously analyzed; as shown in Exhibit X, the addition of solar arrays will not increase the level of operational noise at the site. Facility solar arrays would not be visible from this site. Oregon Trail Well Spring Interpretive

Site may experience some minor traffic impacts during construction. Traffic impacts for this site would be limited to potential delays accessing the site rather than traffic at the site; any potential traffic impacts would be temporary and intermittent during construction, and unlikely to affect the level of use at this site. The turbine noise level, alone, at this site would be comparable in volume to a whisper or less and may be indistinguishable from background noise when the wind is blowing.

Table T-1. Summary of Impacts to Important Recreational Opportunities

Recreational Opportunity	Direct or Indirect Loss of Opportunity?	Worst-case Modeled Operational Noise Level (dBA L_{50})	Maximum Received Sounds Levels During Construction (dBA)	Potential Traffic Impacts	Potential Visual Impacts
Oregon Trail high potential segment	No	Indistinguishable from background	34	Negligible	Viewshed analysis indicates potential visibility of solar arrays along approximately 2 miles of the trail route within the Boardman Bombing Range, at a distance of 4.5 miles or more; due to restricted access no viewers are expected to be present, resulting in no overall visual impact; no conflict with management direction.
Oregon Trail Well Spring Interpretive Site	No	Indistinguishable from background	34	Negligible to Minor; potential short-term, intermittent access delays during construction	Viewshed analysis indicates no potential visibility of solar arrays, therefore no visual impact; no conflict with management direction.

dBA = A-weighted decibels.

4.0 Minimization and Mitigation Measures – OAR 345-021-0010(1)(t)(C)

OAR 345-021-0010(1)(t)(C) A description of any measures the applicant proposes to avoid, reduce or otherwise mitigate the significant adverse impacts identified in (B).

As described Section 3, the Facility will have no significant, direct adverse impact on any important recreational opportunity in the Analysis Area. Indirect disturbance effects associated with traffic,

noise or visual aspects of the proposed solar facilities would not lead to an indirect loss of any important or identified recreational opportunity. Consequently, no mitigation measures for recreation are proposed.

5.0 Monitoring Program – OAR 345-021-0010(1)(t)

OAR 345-021-0010(1)(t)(E) The applicant's proposed monitoring program, if any, for impacts to important recreational opportunities.

Because construction and operation of the proposed Facility would have no significant adverse impacts on recreational opportunities in the Analysis Area, and no mitigation specific to recreation is warranted or proposed, no monitoring program for recreation is proposed.

6.0 References

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Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure T-1 Recreation Opportunities in the Analysis Area

MORROW AND UMATILLA COUNTIES, OR

Oregon Trail ACEC Echo Meadows Interpretive Site

Oregon Trail Well Spring Interpretive Site

Rolling Hills Hunting Preserve

Social Ridge Access Area

Bunker Hill Access Area

Willow Creek Country Club

Willow Creek Water Park

Willow Creek RV Park

Heritage Park

Heppner City Park

Morrow County Fairgrounds

Hagar Park

Willow Creek Dam and Reservoir

Blue Mountain Scenic Byway

Morrow County

Umatilla County

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (5-mile Buffer)
- City/Town
- Interstate Highway
- US Highway
- State Highway
- County Boundary
- Boardman Bombing Range

Recreation Resources

Federal
- Oregon Trail Route
- Oregon Trail Interpretive Site
- Willow Creek Dam and Reservoir

State
- Blue Mountain Scenic Byway

Local
- Park

Private
- Hunting Area
- Other Site

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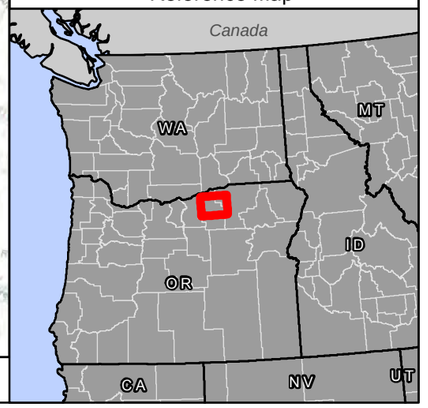
Reference Map



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Wheatridge Wind Energy Facility Request for Amendment 4

Figure T-2 Viewshed Results

MORROW AND UMATILLA COUNTIES, OR

Oregon Trail ACEC Echo Meadows Interpretive Site

Oregon Trail Well Spring Interpretive Site

Rolling Hills Hunting Preserve

Social Ridge Access Area

Bunker Hill Access Area

Willow Creek Country Club

Willow Creek Water Park

Willow Creek RV Park

Heritage Park

Heppner City Park

Morrow County Fairgrounds

Hagar Park

Willow Creek Dam and Reservoir

Blue Mountain Scenic Byway

Morrow County

Umatilla County

84

30, 395

30, 395

207

74

74, 207

206, 207

POVERTY RIDGE

FINLEY BUTTES

SLUSHER CANYON

SOCIAL RIDGE

BUTTERMILK CANYON

DRY HOG CANYON

Approved Site Boundary (Approved Wind Micrositing Corridors)

Amended Site Boundary (Proposed Solar Micrositing Corridors)

Analysis Area (5-mile Buffer)

City/Town

Interstate Highway

US Highway

State Highway

County Boundary

Boardman Bombing Range

Recreation Resources

Federal

Oregon Trail Route

Oregon Trail Interpretive Site

Willow Creek Dam and Reservoir

State

Blue Mountain Scenic Byway

Local

Park

Private

Hunting Area

Other Site

Facility Viewshed Analysis

Not Visible

Potentially Visible

Reference Map

Canada

WA

MT

ID

OR

CA

NV

UT

1:190,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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Attachment T-1.
Inventory of Recreational Opportunities in the Analysis Area

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Inventory of Recreational Opportunities in the Analysis Area

Recreational Opportunity	Responsible Entity	Distance from the Site Boundary (miles)	Description	Size or Distance	Importance Factors					Important Recreation Resource?
					Designation	Demand	Qualities	Rareness	Replaceability	
Blue Mountain Scenic Byway	Oregon Department of Transportation, Federal Highway Administration	4.0/8	Route starts at Heppner Junction on I-84 and ends at Sumpter and Haines in Baker County. The route passes through agricultural land, forest land, near Oregon Trail segments and several historic towns (USFS 1993).	Approx. 145 miles total; Approx. 21 miles in analysis area	Oregon State Scenic Byway	Moderate	Entire route includes diverse scenery, historic towns, a national forest, rocky peaks, and streams; OR 74 is one of several highways through similar eastern Oregon landscapes	Relatively common travel route in the north-central Oregon region	Somewhat Irreplaceable	Yes
Oregon National Historic Trail Segments/Sites	National Parks Service and Oregon Historic Trails Advisory Committee	1.2/4.2	The Oregon Trail was one of the main overland migration routes on the North American continent, leading from locations on the Missouri River to the Oregon Country. A high-potential trail segment has been identified, extending from the eastern boundary of the Boardman Bombing Range westward to Immigrant Road (NPS 1999).	Approx. 8.7 miles of high-potential trail segment in Analysis Area	National Historic Trail	Low	Most trail segments destroyed by agricultural use; interpretive information at the Wells Springs Interpretive Site; public access to this high-potential trail segment restricted by federal and private ownership	Intact evidence of trail route rare	Irreplaceable (intact segments only)	Yes
		1.2/5.1	The Well Spring Interpretive Site offers views of intact wagon ruts, a graveyard and remains of a stage station along with informational signage (NPS 1999).	0.5 acres	National Historic Trail interpretive site	Low	Interpretive signage with historical information but no other facilities; views of intact wagon ruts; appears to be located on private land	Intact evidence of trail route rare	Irreplaceable	Yes
		2.8/15.5	The Echo Meadows site offers a short paved trail walk with informational signage, and views of about one mile of intact wagon ruts (BLM 2015, City of Echo 2013).	300 acres	National Historic Trail interpretive site; BLM ACEC	Low	Interpretive signage with historical information; paved trail leading to views of intact wagon ruts; no other facilities; surrounded by center-pivot irrigated agriculture	Intact evidence of trail route rare	Irreplaceable	Yes
Willow Creek Dam/ Reservoir	U.S. Army Corps of Engineers (USACE)	3.8/13.5	Flood control dam constructed to protect the City of Heppner and provide water supply and irrigation; offers fishing, boating and swimming but in-water activities often restricted due to ongoing water quality issues. Baseball diamond at foot of dam (USACE 2014, DEQ 2012).	268 acres	Federal project land with adjacent RV park/campground	Low	Shallow artificial impoundment in unremarkable setting of grassy rolling hills; lake stocked for fishing but ongoing water quality problems often restrict recreational use; provides setting for adjacent private RV park	Relatively common; one of several reservoirs and large water bodies in region. Baseball field is common, one of four in Heppner	Somewhat irreplaceable	No
Morrow County Fairgrounds	Morrow County	3.1/12.7	Site developed for County Fair with large riding/competition ring, stockyards, barns, grandstand, multipurpose sport field and other facilities, located in City of Heppner (Morrow County 2011).	11.7 acres	County fairgrounds	Moderate	Venue for agricultural/ ranching-related events that are important part of community social and business life	Uncommon; one per county	Replaceable	Yes
Hager Park	City of Heppner	3.7/13.3	Typical small city park with playground and open activity area (Google Earth 2014).	2.3 acres	City park	Low	Typical city park	Common in the local area	Replaceable	No

Recreational Opportunity	Responsible Entity	Distance from the Site Boundary (miles)	Description	Size or Distance	Importance Factors					Important Recreation Resource?
					Designation	Demand	Qualities	Rareness	Replaceability	
Heritage Park	City of Heppner	3.1/12.5	Open space between two roads, with historic information/ exhibits; no developed recreation facilities (Google Earth 2014).	1.4 acres	City park	Low	Typical neighborhood park	Common in the local area	Replaceable	No
Heppner City Park	City of Heppner	3.3/12.7	Small park near center of Heppner, with playground and restrooms (Google Earth 2014).	0.8 acres	City park	Low	Typical neighborhood park	Common in the local area	Replaceable	No
Willow Creek Water Park	City of Heppner	3.0/12.3	Community swimming pool offering seasonal public swimming, lessons and private parties; includes a basketball court (Willow Creek Water Park 2015).	–	City park	Moderate	Outdoor swimming pool open in summer; facilities include locker rooms, showers, slide, hot pool, basketball court	Rare; one of a few public pools in the region	Replaceable	Yes
Willow Creek RV Park	Private/Willow Creek Park District	4.0/13.6	Commercial RV camping facility with 24 RV spaces, some with full utility hookups, restrooms, showers, BBQ pits, picnic tables, additional tent camping spaces, and a boat launch. Campground overlooks Willow Creek Reservoir (USACE 2014, Travel Oregon 2015).	8 acres	Privately managed RV campground	Low-moderate	Typical small RV park with average level of development	RV parks common in local area	Replaceable	No
Willow Creek Country Club	Private	3.0/11.7	Private country club with 9-hole golf course open to public use (Oregon Golf 2014).	30 acres	Private club and golf course	Low-moderate	Short course of below average difficulty in unremarkable setting	Relatively uncommon in the local area	Replaceable	No
Social Ridge Access Area	Private/Oregon Department of Fish and Wildlife (ODFW)	4.9/8.8	Private land designated "Welcome to Hunt" under ODFW's Access and Habitat Program (ODFW 2015).	7,018 acres	Private land where owner permits public hunting	Low-moderate	Open access area consists of rolling hills with a mix of agriculture and grasslands, with no developed facilities or trails	Common in the region	Replaceable	No
Bunker Hill Access Area	Private/Oregon Department of Fish and Wildlife	3.8/9.6	Private land designated for "hunting by permission" under ODFW's Access and Habitat Program (ODFW 2015).	1,345 acres	Private land where owner permits public hunting	Low-moderate	Access area consists of rolling hills with a mix of agriculture and grasslands, with no developed facilities or trails; access by owner permission only	Common in the region	Replaceable	No
Rolling Hills Hunting Preserve, Harrison section	Private	3.9/7.8	Fee hunting on private land for upland game birds raised on site; use limited by reservation to one group per day (Robinson 2002; personal communication between Tim Adams, Rolling Hills Hunting Preserve owner and Thomas Kruger, Tetra Tech, September 2014).	Approx. 1,000 acres	Commercial hunting grounds	Low-moderate	Game birds raised on site for reliable hunting; hunting terrain in rolling grassland; limited availability	Uncommon; one of a few private hunting grounds with stocked game birds in region	Replaceable	No

Exhibit U

Availability of Public and Private Providers to Provide Services

Wheatridge Wind Energy Facility
November 2018

Prepared for

NEXTera ENERGY RESOURCES

Prepared by

TETRA TECH

Tetra Tech, Inc.

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Acronyms and Abbreviations

ASC	Application for Site Certificate
Aviation	Oregon Department of Aviation
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
FAA	Federal Aviation Administration
Facility	Wheatridge Wind Energy Facility
MW	Megawatts
OAR	Oregon Administrative Rule
O&M	Operations and maintenance
ORS	Oregon Revised Statutes
RFA	Request for Amendment

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1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment 4 (RFA 4) to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Council previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit U describes the Facility's ability to meet the requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(u), paragraphs (A) through (E) in consideration of the proposed changes. Exhibits B and C provide additional information on the proposed modifications. As detailed in the following sections, although the proposed changes provide for a new source of energy generation for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for compliance with respect to OAR 345-022-0110 Public Services.

2.0 Applicable Rules and Standards

Under OAR 345-022-0110, the Council must find through appropriate study that:

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impact to the ability of public and private providers within the analysis area described in the project order to provide: sewers and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.

(2) The Council may issue a site certificate for a facility that will produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

(3) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

To demonstrate compliance with this standard, and in accordance with OAR 345-021-0010(1)(u), Exhibit U must include information about significant, potential, adverse impacts resulting from the construction and operation of the Facility on the ability of public and private providers in the Analysis Area to provide the services listed in the standard.

3.0 Analysis Area

The Analysis Area for public services within the Site Boundary and 10 miles from the Site Boundary.. The Site Boundary consists of the Approved Site Boundary and the Amended Site Boundary, and is defined in detail in Exhibits B and C. The Analysis Area is shown on Figure U-1.

3.1 Methods

This exhibit presents an analysis of potential impacts on public service and demonstrates that the Facility will comply with the Public Services standard. It also provides updated information on providers and demographic information within the Analysis Area and demonstrates that there has been no significant change to area resources since the Site Certificate was issued. This exhibit analyses the maximum footprint within the solar micrositing corridors to address the worst-case impact.

3.2 Assumptions Used to Evaluate Potential Impacts – OAR 345-001-0010(1)(u)(A)

OAR 345-021-0010(1)(u) Information about significant potential adverse impacts of construction and operation of the proposed facility on the ability of public and private providers in the analysis area to provide the services listed in OAR 345-022-0110, providing evidence to support a finding by the Council as required by 345-022-0110. The applicant shall include:

OAR 345-021-0010(1)(u)(A) The important assumptions the applicant used to evaluate potential impacts.

Employment during each phase of the Facility was previously reviewed by the Council in the Final Order on the Application (ODOE 2017). The following sections describe employment requirements for RFA 4.

For the purposes of demonstrating impacts to public and private services, the Certificate Holder presents the impact analysis as if the solar arrays will be constructed in a single phase lasting up to 12 months after completion of wind facility construction. Construction of the solar arrays is not expected to overlap with construction of the wind project except to the extent that efficiencies may be gained from construction of some elements of the solar arrays. This approach assumes the maximum average daily traffic count, the daily water use requirement, and the number of workers onsite at any given time.

3.2.1 Construction

Construction of the wind project and construction of the solar arrays will not overlap to any significant extent, and the number of workers needed to construct the solar arrays is less than the number of workers needed to construct the wind project. Therefore, the primary way in which the modifications proposed under RFA 4 will impact public and private services is by extending the duration of construction from 18 months to up to 30 months. An estimated maximum of 250 workers will be onsite at one time, when multiple disciplines of contractors complete their work simultaneously during periods of the highest activity. This is fewer than the 360 workers that were estimated to be on site for construction of the wind power facilities in the ASC (ODOE 2017). Most construction workers will be employees of construction and equipment manufacturing companies under contract to the Certificate Holder.

Approximately 80 percent of the construction workforce hired for construction of the solar arrays will be hired locally (i.e., from within commuting distance of the Facility), and the remaining 20 percent of the workforce will be from out of state and will temporarily relocate to the Facility. Very few, if any, of the out-of-state workers employed during the construction phase of the Facility will be expected to permanently relocate to the area. Local hiring may be greater than anticipated due to the number of renewable energy projects being built in Oregon and will depend on the availability of workers with the appropriate skill-sets. Workers in some positions, such as construction foremen and inspectors, will be employed for the entire duration of the Facility, but many workers will only be employed for approximately 6 months. The Certificate Holder assumes

very few construction workers will relocate their families because it is anticipated most construction workers will not be in the area for more than 6 months. Most construction worker housing will be provided by hotels and recreational vehicle parks (see Sections 3.3.4 and 3.4.4).

Construction truck activity is expected to peak at approximately 5-10 trucks per day for a 6-month period, primarily related to the delivery of solar module and tracker components and concrete. As before, privately owned vehicles will be the primary means of transporting workers to and from the Facility on a daily basis.

Approximately 36.3 Mgal million gallons of water will be needed during Facility construction, primarily for making concrete for solar panel foundation construction and for dust control. As discussed in Exhibit O, potential water sources include the cities of Hermiston, Heppner, Boardman, or other nearby municipalities. Multiple sources may be used to obtain sufficient quantities of water. Water use during operation of the Facility will be limited to small amounts used for solar panel washing as discussed in Exhibit O.

3.2.2 Operations and Maintenance

As previously estimated, approximately 10 to 15 operational personnel will be permanently employed at the Facility at its full capacity (ODOE 2017). The operations and maintenance (O&M) of the solar array will require up to two additional staff. O&M staff will be hired locally, to the extent that skilled workers are available. Some outside contractors may also be required from time to time for specialized maintenance tasks, such as solar panel inspections. The Certificate Holder assumes that the Facility will be in operation for at least 50 years.

3.2.3 Facility Retirement Employment

If the Facility is retired (decommissioned), operational jobs will be eliminated. Retirement of the Facility will require removal of most Facility components and the restoration of disturbed areas (see Exhibits V and W). These activities will result in temporary decommissioning employment similar to the construction of the Facility.

3.3 Affected Public and Private Service Providers – OAR 345-001-0010(1)(u)(B)

OAR 345-021-0010(1)(u)(B) Identification of the public and private providers in the analysis area that will likely be affected.

As previously found by the Council, the Facility is not expected to have any significant, adverse impact on the ability of public or private service providers in the Analysis Area to provide services, either during the construction phase or the operation and maintenance phase (ODOE 2017). Construction workers will be dispersed throughout the construction area and will generally stay in a single location for a period ranging from a few weeks to as long as 12 months.

3.3.1 Sewer and Water Services

In the rural area surrounding the Facility, there are still no developed sewer systems that will be impacted by construction or operation of the Facility. Sewage treatment in this rural area is limited to onsite septic systems. The nearest developed sewer system is located in the city of Heppner, approximately 5 miles from the Site Boundary. As identified in the ASC, due to the rural location of the Facility, portable toilets and onsite private septic systems (in the O&M Buildings) will be used during the construction and operation phases of the Facility (Wheatridge 2015).

In the rural area surrounding the Facility, there are still no developed water systems that will be impacted by construction or operation of the Facility within the Site Boundary. Water sources in the Site Boundary are limited to private landowners' wells. The nearest developed water systems within the Analysis Area are located in the cities of Lexington or Heppner, both approximately 5 miles from the Site Boundary.

3.3.2 Stormwater Drainage

There are no new stormwater drainage facilities within the Analysis Area. As identified in the ASC, in the rural area surrounding the proposed Facility, stormwater infrastructure is limited to minimal facilities associated with public roads maintained by Morrow or Umatilla counties (Wheatridge 2015). The nearest developed stormwater drainage facilities in the vicinity of the Facility are located within the limits of the cities of Heppner and Lexington; however, the Site Boundary is approximately 5 miles from each city, and the Facility will not connect to or otherwise impact either city's stormwater system.

3.3.3 Solid Waste Management

There are no new solid waste facilities located within the Analysis Area. As identified in the ASC, both Morrow and Umatilla counties provide solid waste disposal and recycling services through franchise agreements with various private providers (Wheatridge 2015). Solid waste disposal for the Facility during construction and operations will continue to be provided through a private contract with a local commercial hauler (or haulers). The public landfill closest to the Site Boundary is the Finley Buttes Regional Landfill, located approximately 10 miles south of Boardman, Oregon and approximately 20 miles north of the Site Boundary.

Morrow County has adopted a Solid Waste Management Ordinance that addresses solid waste disposal and recycling in the county. The Certificate Holder will continue to coordinate with waste and recycling franchisees servicing the Facility to maintain required records as needed for the ordinance (Conditions CON-PS-01 and OPR-PS-03).

3.3.4 Housing

There are no new major sources of housing located within the Analysis Area. Typical housing options for temporary workers include hotels or motels, apartments, short-term rental homes, and

campgrounds, or other areas where workers can park mobile housing (e.g., trailers or recreational vehicles). The Certificate Holder assumes that most construction workers will be in the area for approximately 6 months, and that the housing for those workers will primarily be provided by hotels and recreational vehicle parks. Based on this, no existing housing will be directly impacted by the Facility.

The availability of temporary housing will continue to vary seasonally with summer having the highest demand and winter having the lowest demand. Publicly available hotel and motel occupancy data show an estimated statewide year-to-date occupancy rate of 70.3 percent in September from 2016 (OTC 2016). Hotel and motel occupancy rates also vary by region, with occupancy rates in Oregon generally higher in the Portland Metro area.

Some construction workers, particularly those employed for the entire duration of construction, may rent a house or apartment during construction of the Facility. Table U-1 presents updated rental housing supply and availability data for Morrow and Umatilla counties, as reported in the 2017 US Census and 2016 US Census Estimates (US Census Bureau 2017, US Census Bureau 2016). The estimated number of vacant rental units is calculated as a percentage of total vacant housing units; that percentage is based on the ratio of renter-occupied dwellings to owner-occupied dwellings. Using this method, an estimated 1,320 housing units are currently available for rent in Morrow and Umatilla counties.

Table U-1. Available Housing Estimates

Geographic Area	Total Housing Units	Vacant Housing Units	Of Occupied Housing, Percentage Occupied by Renter	Estimated Number of Vacant Rental Units
Umatilla County	30,459	3122	36.5%	1140
Morrow County	4,606	640	28.1%	180
Total	**35,065**	**3,762**	**35.4%**	**1,320**
Source: US Census 2017, US Census Estimates for 2016.				

3.3.5 Transportation and Traffic Safety

The transportation service providers near the Facility are the Oregon Department of Transportation for state highways, and the Public Works departments for Umatilla and Morrow counties for other public roads. Major transportation routes used to access the solar micrositing corridors will be the same as those used to access the Approved Site Boundary (Figure U-2). No new transportation services have been identified as a result of the Site Boundary expansion proposed under RFA 4.

3.3.6 Performance Standards and Existing Traffic

The ODOT performance standards in terms of volume to capacity ratio for State highways have not changed (ODOT 2015). Performance standards for Morrow County roads as defined in the 2012 Morrow County Transportation System Plan have not changed (Morrow County 2012). The performance standards for Umatilla County roads as defined in the 2002 Umatilla County Transportation System Plan have not changed (Umatilla 2002). Based on existing traffic data, the state highways and county roads in Morrow County and Umatilla County are operating well below maximum acceptable volume to capacity ratios.

Road design standards have not changed from the ASC, at this time none of the state roads are restricted; nevertheless, at the time of construction, ODOT and the county transportation departments will be contacted as before by the transportation contractor to make certain that no roads are restricted at that time (PRE-PS-01). The pavement conditions on the state roads are very good at this time and no impairment to the quality of these roads is expected.

The volume of truck traffic for the delivery of solar array components will be considerably less that previously approved by the Council for the wind power project. Condition PRE-PS-01 requires the Certificate Holder prepare a Traffic Management Plan that, among other things, requires the Certificate Holder to notify local jurisdictions of the potential for heavy traffic, and to maintain at least one lane of traffic at all times (see Section 4.0).

3.3.7 Air Transportation

Federal Aviation Administration (FAA) notification will occur as previously approved by Site Certificate Condition PRE-PS-04, which requires that before beginning construction, the Certificate Holder will submit FAA form 7460-1 to the FAA and the Oregon Department of Aviation (Aviation) in accordance with ORS 836.535(2)(a) requesting a determination of No Hazard in order to allow the agency to evaluate the effect of the proposed construction on air safety and navigable airspace.

Following the submittal of the Facility's notice to the FAA and Aviation (a pre-construction requirement), the agency will conduct an aeronautical study; a Determination of No Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard but will not have a substantial aeronautical impact to air navigation. A Determination of No Hazard may include conditional provisions, limitations to minimize potential problems, supplemental notice requirements, or requirements for marking and lighting, as appropriate. The Certificate Holder will provide to the Council a record of all correspondence with FAA and Aviation.

3.3.8 Police and Fire Protection

3.3.8.1 Police

There are no new police services located within the Analysis Area. Police service is primarily provided by county police departments; some of the cities in the Analysis Area have a city police

department that operates within their respective cities but will not cover the Site Boundary. As necessary, the Certificate Holder will continue to seek assistance from the nearest Morrow County Sheriff's Office, located in Heppner, Oregon, or from the nearest Umatilla County Sheriff's Office, located in Hermiston, Oregon. Additional law enforcement service is available through the Oregon State Police, with offices in Arlington, Heppner, Hermiston, and Pendleton. Attachments U-1 and U-2 are records of correspondence with the Morrow and Umatilla county sheriff offices.

3.3.8.2 Fire

There are no new fire districts located within the Analysis Area. Fire protection service in the Analysis Area will continue to be provided by a number of agencies including the Boardman Rural Fire Protection District, the Ione Rural Fire Protection District, the Heppner Volunteer Fire Department, and the Echo Rural Fire Protection District.

The fire protection providers below have been re-contacted for RFA 4:

- Morrow County:
    - Heppner Volunteer Fire Department: Fire Chief Rusty Estes
    - Ione Rural Fire Protection District: Fire Chief Virgil L. Morgan
    - Boardman Rural Fire Protection District: Fire Chief Marc Rogelstad
- Umatilla County:
    - Echo Rural Fire District: Fire Chief Merle Gehrke

Attachments U-3 through U-5 are a record of correspondence with these fire protection providers confirming that the construction and operation of the Facility will not impede their abilities to provide emergency services. The Heppner Volunteer Fire Department was contacted multiple times, but no response has been received to date. As the Facility is outside the boundaries of the City of Lexington, and is completely within the rural fire protection districts of Heppner, Ione, and Echo, any emergency fire response would be by one of those three rural fire protection districts, and any assistance by another fire department would be in the service of one of these three rural fire protection districts.

3.3.9 Health Care

There are no new healthcare facilities located within the Analysis Area. The nearest hospitals are the Pioneer Memorial Hospital located in Heppner and the Good Shepherd Medical Center in Hermiston. The nearest Level III trauma center is the Mid-Columbia Medical Center in The Dalles (Oregon Rural Health Association 2018). Ambulance service in the area is provided by the Morrow County Health District's Emergency Medical Services (Oregon Licensed Ambulance Service Providers 2016). Some of the nearby fire districts also have First Response Vehicles, with equipment and crew trained to stabilize a patient until the arrival of an ambulance for transport.

In the event of a serious injury during construction or operation of the Facility, the patient may be flown by helicopter (operated by Life Flight) to one of the two Level 1 hospitals located in Portland: Oregon Health & Science University Hospital or Legacy Emmanuel Medical Center.

3.3.10 Schools

There are no new school districts or schools located within the Analysis Area. The Site Boundary still falls within two school districts: Morrow County School District No 1 and Echo School District No. 5 in Umatilla County. Other nearby school districts (most of which are outside of the 10-mile Analysis Area) that may experience an increase in enrollment due to the Facility include: the Hermiston, Stanfield, and Pendleton school districts in Umatilla County, the Ione School District in Morrow County, and the Richland, Kennewick, Prosser, Kiona-Benton City, and Finley school districts in Benton County, Washington.

3.4 Potential Impacts on Public and Private Providers – OAR 345-001-0010(1)(u)(C)(D)

OAR 345-021-0010(1)(u)(C) A description of any likely adverse impact to the ability of the providers identified in (B) to provide the services listed in OAR 345-022-0110.

OAR 345-021-0010(1)(u)(D) Evidence that adverse impacts described in (C) are not likely to be significant, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.

3.4.1 Sewer and Water Services

As previously found by the Council, the Facility is not likely to have an adverse impact to water or sewer services because in the rural area in which the Facility is proposed, there are no developed water or sewer systems that will be impacted by construction or operation of the Facility (ODOE 2017). There are no new systems, facilities, or water systems located within the Site Boundary. Due to the distance to the nearest developed sewer system, the Certificate Holder does not anticipate that connection to sewers or sewage treatment facilities will be required. Therefore, impacts to community sewer systems are not anticipated.

Because water for construction will only be obtained from permitted municipal sources with adequate water rights, public water systems will not be adversely affected by construction of the Facility. The Public Works Departments of Hermiston, Stanfield, and Boardman, as well as the Port of Morrow, have provided written correspondence (see Exhibit O) that adequate water is available for the construction of the Facility. Construction of the Facility is highly unlikely to affect the small number of wells in the Analysis Area. As identified in the ASC, water use during operations will be limited and supplied through an exempt well located at each of the O&M Buildings (Wheatridge 2015). The limited amount of water that can be used from an exempt well is not expected to result in injury to other private water rights in the vicinity of the Facility.

3.4.2 Stormwater Drainage

As previously found by the Council, the Facility is not likely to have an adverse impact on the provision of stormwater drainage services because construction, operation and decommissioning will not require construction or expansion of public stormwater drainage facilities (ODOE 2017).

The Certificate Holder will continue to implement best management practices during construction through retention and infiltration systems and will continue to comply with previously outlined statutes and regulations related to stormwater runoff, including the National Pollutant Discharge Elimination System 1200-C permit and the associated Erosion and Sediment Control Plan. In accordance with Condition CON-SP-01, these will be completed prior to construction.

3.4.3 Solid Waste Management

As previously found by the Council, construction and operation of the Facility is not likely to have an adverse impact on solid waste management (ODOE 2017).

The Certificate Holder will continue to implement best management practices for disposal and recycling, by collecting all waste to be hauled away by a licensed waste disposal service as required by Condition CON-PS-01. The Facility is not likely to cause adverse impacts to services already being provided in the counties or nearby communities. The operation and routine maintenance of the solar array will not require additional staff during operations, which will not increase the generation of solid waste. Exhibit V includes detailed information about types and quantities of solid waste and disposal.

Wastes will be recycled to the extent practicable and will contract with a local franchise waste hauler to remove both recyclables and solid waste from the Facility area. As mandated by Morrow County's Solid Waste Management Ordinance, the Certificate Holder will coordinate with waste and recycling franchisees servicing the Facility to maintain required records (Condition GEN-PS-01). Solid wastes are anticipated to be disposed at the Finley Butte Landfill, which has adequate capacity to serve the Facility, confirmed via correspondence with Dean Large, Sales Manager at Finley Butte Landfill, (Attachment U-6).

3.4.4 Housing

As previously found by the Council, construction and operation of the Facility is not likely to have a significant adverse impact on housing in the Analysis Area (ODOE 2017). The construction workforce will be dispersed among a number of communities in the area and will generally stay in one place for up to 6 months at a time.

3.4.5 Transportation and Traffic Safety

The Council previously found that impacts on roadways and traffic safety could be effectively minimized or mitigated through implementation of identified minimization measures, best management practices, and Site Certificate Conditions (ODOE 2017). In addition, the Certificate Holder will enter into Road Use Agreements with the county works departments to ensure county roads are maintained and repaired, and to ensure new access roads, private roads, and modifications of county roads conform to county requirements, as required by Site Certificate Conditions.

3.4.6 Impacts to Existing Levels of Service

As described in Section 3.3.6, the volume of truck traffic for the delivery of solar array components will be considerably less than previously approved by the Council for the wind power project. Given the low traffic volumes and volume to capacity ratios on existing roads, the additional Facility traffic generated during construction commuting is not anticipated to cause notable congestion. Therefore, the Council can rely on its earlier finding that there will not be impacts to existing levels of service (ODOE 2017).

3.4.7 Police and Fire Protection

3.4.7.1 Police

The changes proposed under RFA 4 are not expected to require more police services than those considered in the Final Order (ODOE 2017). The number of temporary construction workers is not anticipated to place significant new demands on law enforcement agencies in the area. The law enforcement service providers in Morrow and Umatilla counties have been re-contacted (Attachments U-1 and U-2). Both have indicated that they can provide services to the Facility without impact to their current customer service base.

As required by Site Certificate Condition CON-PS-02, onsite 24-hour security during construction and effective communications will be established between onsite security personnel and the local sheriff offices. As previously approved by the Council, construction and operation of the Facility will not have a substantial adverse impact on the provision of law enforcement services in the Analysis Area (ODOE 2017).

3.4.7.2 Fire

The greatest risk of fire on a solar farm occurs during construction, particularly from metal cutting and welding. In addition, fire hazards can result from workers smoking, refueling vehicles and equipment, and operating or parking vehicles and other equipment off roadways in areas of tall dry grass that could ignite upon contact with hot vehicle parts (e.g., mufflers or catalytic convertors). Fire danger during construction can be significantly reduced through the implementation of safe working practices, such as maintaining adequate firefighting equipment and water supplies on

hand during operations that carry a high fire risk, conducting metal cutting and welding within a cleared or graveled area, and preventing parking of vehicles in areas with high, dry grass.

Transportation of lithium-ion batteries for the distributed energy storage system is subject to 49 Code of Federal Regulations 173.185, as described in Exhibit G. The regulations include requirements for the prevention of a dangerous evolution of heat, short circuits, and damage to the terminals, and also require that no battery come in 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 the transport, use, or disposal of batteries. Fire prevention practices previously listed in the Final Order will continue to be adhered to. In addition, Site Certificate Conditions requiring fire prevention and response training (GEN-PS-03), submission of site plan to fire protection officials (PRO-PS-02) and requiring the Site Certificate Holder to provide current contact information for personnel (OPR-PS-04) will help minimize impacts.

During the operational phase of the Facility, fire danger will be minimal. Solar panels contain a number of safety features designed to provide increased fire protection. The distributed energy storage system must be kept in a temperature-controlled facility with individual battery modules isolated to prevent the spread of fire if it were to occur. The battery storage system will incorporate a fire sprinkler system as designed by the battery manufacturer. The battery systems will be stored in completely contained, leak-proof modules. O&M staff will conduct frequent inspections of the battery systems according to the manufacturer's recommendations, which are assumed to be monthly inspections. An emergency management plan will also be developed with response procedures in the event of an emergency, such as a fire (Condition PRE-PS-05). In addition, the portions of the Project Area that will be graded will be replanted with a low-growing mix of grasses. The site will be mowed as needed for fire safety requirements and to keep vegetation from interfering with operations and maintenance activities.

Typical maintenance activities will not carry a significant fire risk, while maintenance vehicles will drive and park on maintained gravel roads, avoiding hazards associated with driving or parking in tall dry grass. Given the inherent fire-safety features of Facility components and the relatively small number of new temporary and permanent residents, significant new demands on fire protection forces are not anticipated.

The fire protection providers identified in Section 3.3.6 have been re-contacted, see Attachments U-3 through U-5. Except for the Heppner Volunteer Fire Department, which has not responded to multiple attempts at contact, all fire protection providers have indicated that the construction and operation of the Facility will not impact their ability to provide fire protection services to their respective districts.

3.4.8 Health Care

As previously found by the Council, construction and operation of the Facility is not likely to have an adverse impact on area health care providers (ODOE 2017). Impacts on health care will remain

the same since the need for the services will not increase because of the modifications proposed under RFA 4 and the ability of the community to provide health care services has not changed since the Site Certificate was issued.

3.4.9 Schools

As previously found by the Council, no significant adverse impacts to schools are anticipated during construction and operation of the Facility (ODOE 2017). No schools are located within the Site Boundary or will be directly affected by Facility construction or operations. Construction will be temporary and short-term, and much of the peak work period will occur during the summer months when school is not in session. Therefore, the Council may rely on its earlier findings to conclude that the modifications proposed under RFA 4 will not adversely affect schools.

4.0 Proposed Monitoring Programs – OAR 345-001-0010(1)(u)(E)

OAR 345-001-0010(1)(u)(E) The applicant's proposed monitoring program, if any, for impacts to the ability of the providers identified in (B) to provide the services listed in OAR 345-022-0110.

The following plans were previously identified for monitoring potential Facility impacts on service providers and are now Site Certificate Conditions:

- Provide employees fire prevention and response training and equivalent training for new employees or subcontractors working on the site and retain records (Condition GEN-PS-03).
- Prepare an Emergency Management Plan, maintain the plan, and train onsite workers on the fire prevention and safety procedures (Condition PRE-PS-05).
- Develop a site Health and Safety Plan, update the plan annually, and maintain through operations (Condition PRE-PS-06).
- Ensure all construction workers are certified in first aid, cardio pulmonary resuscitation and automated external defibrillator use; maintain records and certification; and keep a working automated external defibrillator onsite during construction (Condition PRE-PS-07).
- Provide 24-hour onsite security during construction and develop effective communications with local sheriff's offices (Condition CON-PS-02).
- Provide a final site plan to the identified fire protection districts and first-responders included in the Emergency Medical Plan (Condition PRO-PS-02).

- Prepare a Traffic Management Plan to include procedures and actions described in the Project Order and mitigation measures identified in Section 3.4.5 (Condition PRE-PS-01).
- Enter into Road Use Agreements with counties and conduct pre-construction assessments, construction monitoring, and post-construction inspection and repair as required by counties public works departments (Conditions PRE-PS-02, PRE-PS-03, and PRE-PS-04).

The modifications proposed under RFA 4 do not affect the Certificate Holder's ability to comply with these conditions and no new monitoring programs are required as a result of the proposed modifications.

5.0 Conclusions

Based on the evidence presented in this Exhibit U, the Council may rely on its earlier findings to conclude in accordance with OAR 345-022-0110 that the construction and operation of the Facility, as modified under RFA 4, taking into account Site Certificate Conditions, is not likely to result in significant adverse impacts on the ability of the providers within the Analysis Area to provide the following services: sewers and sewage treatment, water, stormwater drainage, solid waste management, housing, traffic safety, police and fire protection, healthcare, and schools.

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Figures

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure U-1 Analysis Area of Public Services

MORROW AND UMATILLA COUNTIES, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (10-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- County Highway
- Local Road

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map

1:275,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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Wheatridge Wind Energy Facility Request for Amendment 4

Figure U-2 Primary Construction Transportation Routes

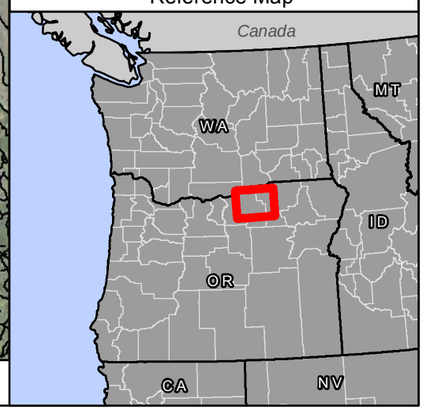
MORROW AND UMATILLA COUNTIES, OR

- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (10-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- County Highway
- Local Road
- Transportation Route

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



1:275,000 WGS 1984 UTM Zone 11N

0 2.5 5 10 15 20 Miles

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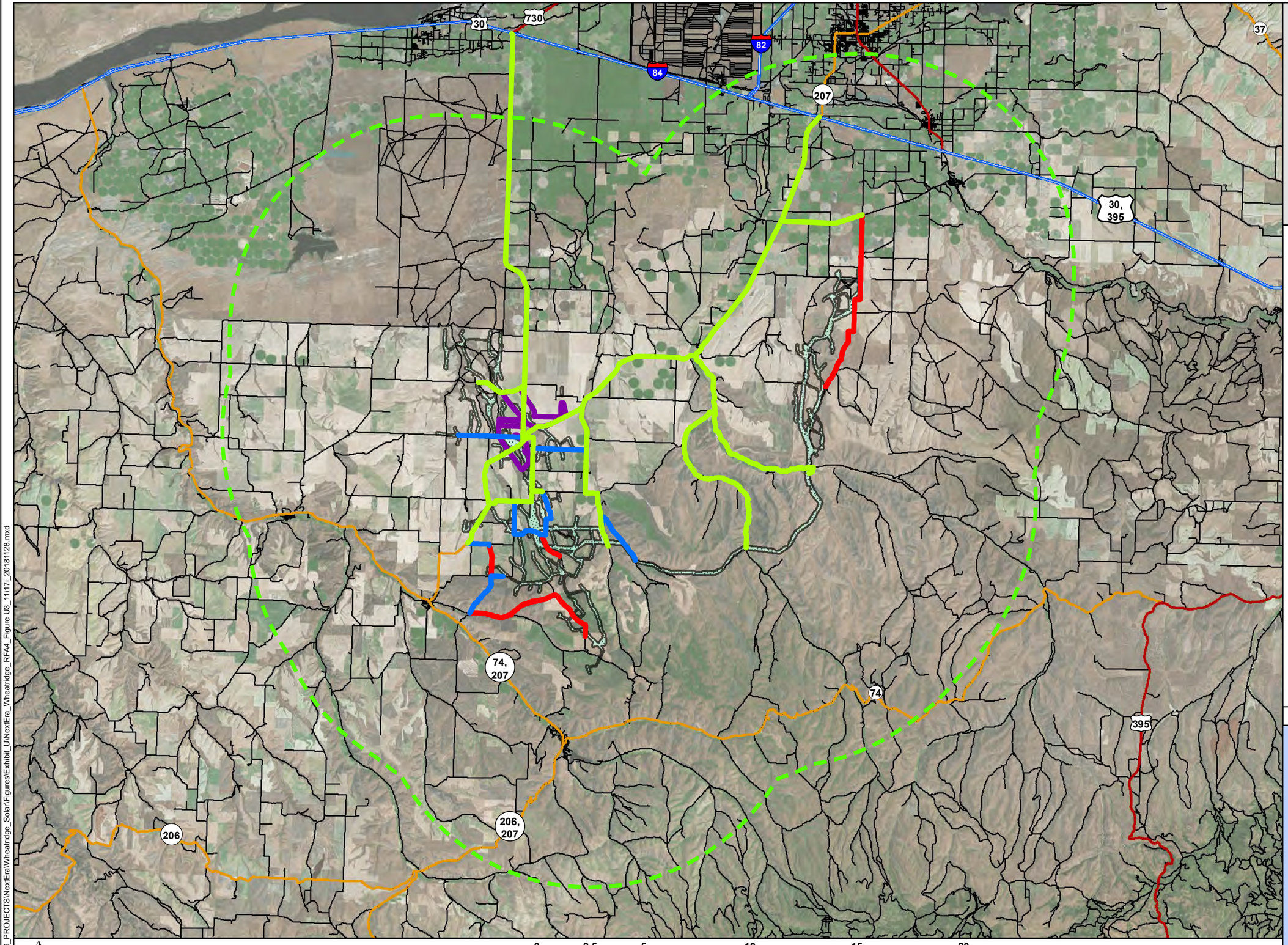
Wheatridge Wind Energy Facility Request for Amendment 4

Figure U-3 Public and Private Access Roads

MORROW AND UMATILLA COUNTIES, OR



- Approved Site Boundary (Approved Wind Micrositing Corridors)
- Amended Site Boundary (Proposed Solar Micrositing Corridors)
- Analysis Area (10-mile Buffer)
- Interstate Highway
- US Highway
- State Highway
- County Highway
- Local Road

County Roads Requiring Upgrades Prior To Construction *

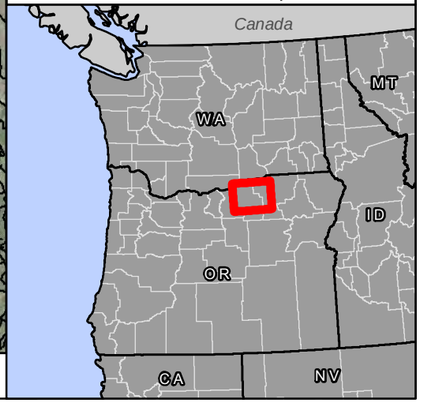
- OK As Is
- Requiring Some Upgrades
- Requiring Major Upgrades

* All county roads requiring upgrades will be improved to a condition "as good as or better" than currently existing; in coordination with Morrow and Umatilla County Road Masters.

TETRA TECH

NEXTera ENERGY RESOURCES

Reference Map



P:\GIS_PROJECTS\NextEra\Wheatridge_Solar\Figures\Exhibit_U\NextEra_Wheatridge_RFA4_Figure U3_11i17i_20181128.mxd

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Attachment U-1. Record of Correspondence with Morrow County Sheriff's Department

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MORROW COUNTY SHERIFF
325 Willow View Drive – P.O. Box 159
Heppner, Oregon 97836
Phone: (541) 676-5317
Fax: (541) 676-5577

Kenneth W. Matlack, Sheriff
John A. Bowles, Undersheriff

To: Kristen Gulick

Date: 10-24-2018

From: John A. Bowles, Undersheriff

Re: Wheatridge Energy Project

The Morrow County Sheriff's Office is the primary Law Enforcement agency for the area in which the Wheatridge Wind Energy Facility will be located. This project is in a low to medium crime area in our county.

The Sheriff's Office will respond appropriately and as necessary to all complaints that come from the Wheatridge Project. We do not expect this project to adversely affect the Morrow County Sheriff's Office in terms of additional workload.

Sincerely,

John A. Bowles

John A. Bowles, Undersheriff/ Emergency Manager
Morrow County Sheriff's Office

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Attachment U-2. Record of Correspondence with Umatilla County Sheriff's Department

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From:	Terry Rowan
To:	Sheriff; Gulick, Kristen
Subject:	Re: RESPONSE NEEDED ASAP - Umatilla County Sheriff"s Office Agreement with Wheatridge Wind/Solar Project - ATTENTION TERRY ROWAN
Date:	Friday, October 19, 2018 12:59:03 PM

Kristen,

Yes, the agreement is accurate. The Umatilla County Sheriff's Office (UCSO) is the primary policing agency responsible for coverage in the project area. UCSO will respond to incidents as required.

Thank you
Sheriff Terry L. Rowan

On Wed, Oct 17, 2018 at 1:52 PM Sheriff <sheriff@umatillacounty.net> wrote:

---------- Forwarded message ---------
From: **Gulick, Kristen** <Kristen.Gulick@tetratech.com>
Date: Wed, Oct 17, 2018 at 10:13 AM
Subject: RESPONSE NEEDED ASAP - Umatilla County Sheriff's Office Agreement with Wheatridge Wind/Solar Project - ATTENTION TERRY ROWAN
To: sheriff@umatillacounty.net <sheriff@umatillacounty.net>

Hello,

I am contacting you on behalf of the Wheatridge Wind/Solar Project.

Correspondence was received from you in 2014 confirming that the Umatilla County Sheriff's Office will respond as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | Environmental Planner

Kristen.Gulick@tetratech.com

Tetra Tech | Portland

1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tetratech.com

Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

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Terry Rowan
Sheriff
Umatilla County Sheriff's Office
4700 NW Pioneer Place
Pendleton, OR 97801
phone: (541)966-3603
cell: (541)969-1910
Email: terry.rowan@umatillacounty.net

Attachment U-3. Record of Correspondence with Ione Rural Fire Protection District

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I.R.F.P.D
Ione Rural Fire Protection District
PO Box 6 – 160 West Main Street
Ione, Oregon 97843
541-422-7303

July 2, 2018
Carrie Konkol
Tetra Tech, Inc.
1750 SW Harbor Way, Suite 400
Portland, OR 07201
503-721-7225 ext. 2258

The Ione Rural Fire Protection District is one of five departments that will provide protection to the area where Wheatridge Wind Energy Facility, including energy storage, will be located.

Ione RFPD does not provide high angle or confined space rescue.

We find that this wind facility will not have a significant impact on our ability to fight wildfires.

Sincerely,

Virgil L. Morgan

Virgil L. Morgan

Ione RFPD Fire Chief

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Attachment U-4. Record of Correspondence with Echo Rural Fire Protection District

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From: Delbert Gehrke
To: Solsby, Anneke
Subject: RE: Wheatridge Wind Energy Facility
Date: Friday, July 06, 2018 6:23:49 AM

Anneke, the only change we would request would be that a 100 foot vegetation free zone be maintained around the battery storage area in the event of a wildland fire.

Sincerely,
Chief Delbert Gehrke
Echo Rural Fire Protection District.

From: Solsby, Anneke [mailto:Anneke.Solsby@tetratech.com]
Sent: Monday, July 02, 2018 12:56 PM
To: dgehrke000@centurytel.net
Subject: Wheatridge Wind Energy Facility

Hello Delbert,

As discussed on the phone, we are proposing to add energy (battery) storage to the Wheatridge Wind Energy Facility. Wheatridge Wind Energy Facility is an approved wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts, to be located on approximately 13,097 acres both in Morrow and Umatilla counties – see attached map. Previously, Merle Gehrke had provided a letter stating that the Echo Rural Fire District did not have any reservations regarding the project – see attached. We need a similar confirmation stating that the potential fire and hazard risk from the proposed addition of energy (battery) storage systems would not impact Echo Rural Fire District's ability to provide fire protection services to the Facility. An email response to this email will suffice.

Although siting and design isn't final, the proposed energy storage systems (20 MW system in Umatilla County) would consist of lithium-ion batteries contained in a building or series of modular containers and would include approximately 18 inverters and associated step-up transformers, as well as interconnecting facilities (control house, protective device and power transformer). The proposed battery storage systems may include ground-level cooling equipment, power conditioning systems, distribution and auxiliary transformers. The proposed battery storage systems would be located adjacent to the previously approved substation and operation and maintenance building sites and would each result in up to 5 acres of new permanent disturbance.

Please let me know if you need additional information. Thank you in advance for your assistance.

Sincerely,

Anneke Solsby | **Environmental Planner**
Anneke.Solsby@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201
Direct: 503.721.7217 | Fax: 503.227.1287 | Cell: 503.860.9076

Attachment U-5: Record of Correspondence with Boardman Rural Fire Protection District

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From:	Marc Rogelstad
To:	Gulick, Kristen
Subject:	RE: RESPONSE NEEDED ASAP - Boardman Rural Fire Protection District Agreement with Wheatridge Wind/Solar Project
Date:	Wednesday, October 17, 2018 11:26:59 AM

No Changes to the Document.

Chief Rogelstad

From: Gulick, Kristen [mailto:Kristen.Gulick@tetratech.com]
Sent: Wednesday, October 17, 2018 10:01 AM
To: Marc Rogelstad
Cc: Boardman Fire
Subject: RESPONSE NEEDED ASAP - Boardman Rural Fire Protection District Agreement with Wheatridge Wind/Solar Project

Hello,
I am contacting you on behalf of the Wheatridge Wind/Solar Project.
Correspondence was received from you in 2015 confirming that the Boardman Rural Fire Protection District will aid local Fire Districts in fire protection as needed for the project.

This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tetratech.com
Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

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Attachment U-6: Record of Correspondence with Finley Butte Landfill

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From:	Jocelyn Jones
To:	Gulick, Kristen
Subject:	FW: RESPONSE NEEDED ASAP - Finley Butte Landfill Agreement with Wheatridge Wind/Solar Project
Date:	Wednesday, October 17, 2018 10:43:26 AM
Attachments:	Finley Butte Landfill Correspondence.pdf ATT00001.htm

---

Kristen,

I am the new sales rep for Wasco and Finley Buttes Landfill. Below is my contact information if you need anything. Is regards to Finely being able accept this material and its capacity we can still adequately handle 9000cy of waste over a 34 week period.

Jocelyn Jones | Landfill Sales
Wasco County and Finley Buttes
Western Region – Waste Connections
501 SE Columbia Shores Blvd. Ste 350 Vancouver, WA 98661
Mobile: 360.936.0386|jocelynr@wcnx.org

Sent from my iPhone

Begin forwarded message:

> **From:** "Gulick, Kristen" <Kristen.Gulick@tetratech.com>
> **Date:** October 17, 2018 at 9:53:46 AM PDT
> **To:** "DeanL@WasteConnections.com" <DeanL@WasteConnections.com>
> **Cc:** "customerservice2050@wcnx.org" <customerservice2050@wcnx.org>, "cust2050@wcnx.org" <cust2050@wcnx.org>, "jeffbis@wcnx.org" <jeffbis@wcnx.org>
> **Subject: RESPONSE NEEDED ASAP - Finley Butte Landfill Agreement with Wheatridge Wind/Solar Project**
>
> Hello,
> I am contacting you on behalf of the Wheatridge Wind/Solar Project.
> Correspondence was received from you in 2015 confirming that the Finley Butte Landfill will have the adequate capacity to handle the construction waste generated by the project.
>
> This correspondence occurred during the original project development phase and we are contacting you in regards to the new phase, the addition of a solar array, to verify that you are still able to provide the same service (assuming mutually agreeable terms can be reached). Please see the attached letter of correspondence.

If you could please confirm that the correspondence agreement is still accurate as soon as possible, that would be greatly appreciated. This is a very quick project turn-around. It can be a statement on your letterhead with your signature if you like, or even a reply to this email that Finley Butte can adequately handle 9,000cy of waste over a 34 weeks period.

Thanks so much,

Kristen Gulick | **Environmental Planner**
Kristen.Gulick@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201 | www.tetratech.com
Direct: 503.721.7216 x 2241 | Fax: 503.227.1287 | Cell: 541.740.3316

Exhibit V

Generation of Solid Waste and Wastewater

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Table of Contents

Acronyms and Abbreviations

ASC	Application for Site Certificate
BMP	Best Management Practices
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	Megawatts
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and maintenance
OAR	Oregon Administrative Rule
ODEQ	Oregon Department of Environmental Quality
RFA	Request for Amendment

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment (RFA) 4 to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and conditions of the Site Certificate. Exhibit V provides information on anticipated solid waste and wastewater generation during construction and operation of the Facility as amended by RFA 4, to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(1)(v) paragraphs (A) through (G).

As detailed in the following sections, although the proposed changes provide for additional solid waste and wastewater needs for the Facility and a larger Site Boundary, the Certificate Holder can still comply with all Site Certificate conditions previously adopted by the Council for compliance with the respect to OAR 345-022-0210 for waste minimization.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

Conditions applicable to solid waste and wastewater include:

- PRE-WM-01: Minimum waste management plan requirements.
- PRE-WM-02: Confirmation of no surface/ground/drinking water impacts from concrete washout.
- CON-WM-01: Requirements of off-site soil disposal.
- CON-PS-01: Construction Waste Management Plan.
- OPR-PS-01: Discharge of wastewater.
- OPR-PS-03: Implementation of an operations waste management plan.
- GEN-PS-01: Coordination with solid waste handler.
- CON-SP-01: Work in compliance with a final Erosion and Sediment Control Plan as required under the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Discharge General Permit 1200-C.

2.0 Description of Solid Waste and Wastewater Generation – OAR 345-021-0010(1)(v)(A)

OAR 345-021-0010(1)(v) Information about the applicant's plans to minimize the generation of solid waste and wastewater and to recycle or reuse solid waste and wastewater, providing evidence to support a finding by the Council as required by OAR 345-022-0120. The applicant shall include:

OAR 345-021-0010(1)(v)(A) A description of the major types of solid waste and wastewater that construction, operation and retirement of the facility are likely to generate, including an estimate of the amount of solid waste and wastewater.

OAR 345-022-0120 Waste Minimization

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that, to the extent reasonably practicable:

(a) The applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;

(b) The applicant's plans to manage the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.

(2) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the

Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

(3) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

2.1 Solid Waste

The following sections identify the types of solid waste anticipated to be generated throughout the Facility and the estimated quantities of waste. During construction and operation, the Certificate Holder shall coordinate with its solid waste handler to provide the information solicited through the Oregon Department of Environmental Quality's (ODEQ) Recycling Collector Survey to the Morrow County waste shed representative on an annual basis (Condition GEN-PS-01).

2.1.1 Construction

Construction of the Facility would generate a small amount of non-hazardous solid waste, required in the minimum Waste Management Plan requirements (Condition PRE-WM-01). The types of solid waste will be similar to those from construction of wind turbines, given that the same types of construction materials will be used (see Exhibit G). Waste materials generated through construction of the solar components will primarily consist of concrete waste and packaging materials, which are consistent with materials previously considered by Council. It is estimated that Facility construction would produce approximately 2,000 cubic yards of waste, which will be disposed of following the Construction Waste Management Plan (Condition CON-PS-01).

Access road construction and grading are expected to produce negligible amounts of dirt and rock spoils that would need disposal, since cut and fill measures are expected to balance the need for and use of soils. Excavation for the solar array foundations, support structures, and the collector substation expansion are not expected to produce significant amounts of dirt and rock spoils. These materials would be spread over areas previously disturbed during construction. Materials would only be spread as appropriate, with adequate measures for soil conservation and erosion and sediment control, as required by the Erosion and Sediment Control Plan (Condition CON-SP-01). When it is not appropriate to spread materials over previously disturbed areas, materials would be hauled to appropriate disposal sites on participating landowner property; the location of such sites will be determined on an as-needed basis during construction. If off-site soil disposal is necessary, the requirements of off-site soil disposal in Condition CON-WM-01 will be followed.

2.1.2 Operation

The addition of the solar arrays will not change the way that operational solid waste will be handled from what the Council previously considered. An insignificant amount of solid waste is expected to be generated during the operation and maintenance of the Facility. This waste may include equipment and components that are replaced, packing materials for replacement

components, and waste typical of a small office employing up to 10 people. It is estimated that no more than 2 cubic yards of waste would be produced monthly based on the addition of the proposed solar arrays, for a total of up to 8 cubic yards of waste for the Facility as a whole, to be disposed of at either the Finley Butte Landfill or through the Morrow County Rural Solid Waste Collection Services, as identified in the Application for Site Certificate (ASC). The waste would be handled consistent with the Morrow County Solid Waste Management Ordinance and according to the Operations Waste Management Plan (Condition OPR-PS-03).

As described in Exhibit G, the distributed energy storage system will require regular replacement of batteries as they degrade over time. These batteries will be replenished at a rate dependent on usage. For example, a battery that is cycled more often will degrade faster than one that is used less often. For this analysis, the Certificate Holder assumed that 11 battery racks per 1 MW will be replaced every 3 years over the life of the Facility (assumed to be 50 years). This assumption likely overestimates the number of batteries that will flow into and out of the Facility, because not all batteries will be replaced during each replenishment cycle (e.g., fewer batteries will need replacing early in the Facility life span). A group of lithium-ion battery cells will comprise a "rack." At this rate of replacement, approximately 27,555 battery racks will be used over operation term of the distributed energy storage system (Exhibit G).

As identified in RFA 2, for the replacement of batteries during operation, the Certificate Holder will follow the handling guidelines of 49 Code of Federal Regulations 173.185 – Department of Transportation Pipeline and Hazardous Material Administration related to the shipment of lithium-ion batteries. Licensed third party battery suppliers will be responsible for transporting batteries to and from the Facility in accordance with applicable regulations, as required through their licensure (Condition GEN-OE-04). Spent batteries will be disposed at a facility permitted to handle them, in compliance with applicable Resource Conservation and Recovery Act and Toxic Substances Control Act regulations administered by the U.S. Environmental Protection Agency or ODEQ (Condition OPR-PS-03).

Repair or replacement of the solar arrays and associated electrical equipment could generate incidental waste. However, a solar array typically lasts more than 30 years without significant degradation in function, and will be replaced infrequently, if at all. Operation of the solar arrays will not result in a significant amount of solid waste.

2.1.3 Decommissioning

The anticipated working life span of the Facility is 50 years, after which time the Facility may be extended, repowered, or decommissioned. Facility retirement is discussed in greater detail in Exhibit W. In the event the Facility would be decommissioned, and the site restored to a useful, non-hazardous condition for other planned uses, the amount of solid waste can be inferred from the materials inventory provided in Exhibit G. Should the Facility be decommissioned, the components will be disassembled, and the materials will be recycled, sold for scrap, or taken to a landfill following the requirements of the Operational Waste Management Plan (Condition OPR-PS-03). Ancillary components, such as concrete foundations and gravel, will be removed in a manner

similar to the methodology approved in the ASC. Underground cables would typically be left in place, as removing them would cause unnecessary habitat disturbance.

The retirement of the battery storage system will involve disposing of battery components at an off-site facility designed and approved for disposal or recycling of batteries by licensed third party battery suppliers, who will be responsible for transporting batteries to and from the Facility in accordance with applicable regulations, as required through their licensure (Condition GEN-OE-04). The batteries will be disposed of at retirement in the same manner described above for operational replacement.

Wastes generated by retirement from the solar arrays and battery storage system will be recycled where feasible to reduce waste generation. Decommissioning of Facility components will generate waste that will be recycled where feasible, or disposed of at the Finley Butte Landfill. Facility components to be removed and recycled or disposed will include solar photovoltaic modules, steel mounting racks, posts, and trackers; any aboveground 34.5-kilovolt electrical cable and associated support structures; inverters, transformers, and distributed energy storage modules; and concrete and aggregate used for foundations and road construction. Exhibit W has further details on Facility decommissioning.

2.2 Wastewater

Wastewater generated by the Facility will include construction wastewater consisting of equipment wash water and concrete washout water and operational wastewater from washing of solar panels. This section discusses how each of these types of wastewater will be handled throughout the life of the Facility.

2.2.1 Sanitary Wastewater

Sanitation during construction activities will be addressed through the provision of portable toilets located throughout the Facility Site Boundary at locations that will determined prior to and during construction, as described in the ASC. Portable toilets will be provided by a licensed subcontractor, who will be responsible for servicing the toilets at regular intervals and disposing of wastewater in accordance with local jurisdictional regulations. The construction contractor will ensure that a sufficient number of toilets are provided, and that the licensed subcontractor complies with applicable regulations, including the use of holding tanks for biological waste that conform to OAR 340-071 and transportation of waste in accordance with Oregon Revised Statutes 466.005.

For operation and maintenance of the Facility, there will be no change to the previously approved plan of how sanitary waste would be handled, through an on-site septic system serving each of the operations and maintenance (O&M) Buildings, as discussed in the ASC.

2.2.2 Construction

No new types of wastewater will be generated from the construction of the solar arrays. Construction, operation, or decommissioning activities may generate small amounts of wastewater that can be allowed to infiltrate on-site, according to the terms of a NPDES Permit that will be issued by ODEQ (Condition CON-SP-01). Facility construction, operation, and decommissioning would not generate substantial amounts of wastewater that would need to be treated as effluent. The nature of the Facility is such that it would not produce industrial wastewater.

Concrete truck chutes would be washed down at each foundation site to prevent the concrete from hardening within the chutes. Concrete wastewater will be handled as previously described, using Best Management Practices (BMP) for the construction of wind generation facilities within the area, which have been accepted by ODEQ. In addition, an investigation in coordination with ODEQ will be required to confirm that no surface, ground, or drinking water impacts would occur from concrete washouts (Condition PRE-WM-02).

2.2.3 Operation

Minimal water will be used during operations and will primarily be related to sanitation at the O&M building. There will be no change to the Certificate Holder's plan to construct a septic system to serve the sanitary uses at the O&M Building. The Certificate Holder will design each septic system for a discharge capacity of less than 2,500 gallons per day (OPR-PS-01).

New operational wastewater sources may be needed for periodic washing of the solar modules to minimize the effects of dust and dirt on energy production. Assuming the solar modules are washed, at an estimated 0.5 gallons per module, for a total of 650,250 modules, each wash will require 325,125 gallons, for a total of 650,250 gallons per year (see Exhibit O). The water used for solar array cleaning is not anticipated to require off-site disposal due to the extremely high evaporation rate and expected infiltration at the site.

2.2.4 Decommissioning

Minimal wastewater will be generated during retirement of the solar arrays and supporting facilities, and the solar facilities will be decommissioned the same manner as previously described and approved for the wind facilities. Retirement of the solar array and related electrical components will not generate any wastewater. Facility retirement is discussed in greater detail in Exhibit W.

3.0 Description of Waste Management and Disposal Structures, Systems and Equipment – OAR 345-021-0010(1)(v)(B)

OAR 345-021-0010(1)(v)(B) A description of any structures, systems and equipment for management and disposal of solid waste, wastewater and storm water.

The Certificate Holder will comply with all applicable waste handling and disposal regulations on all lands associated with the Facility. Solid waste will be stored in a manner that does not constitute a fire, health, or safety hazard until such waste can be hauled off for recycling or disposal, as appropriate. The following sections describe the handling and disposal of non-hazardous solid waste planned throughout the duration of the Facility.

3.1 Construction

Construction of the solar arrays will not add any new types or significant quantities of waste, and as a result, no new structures, systems, or equipment will be needed to manage and dispose of construction wastes. All waste will be disposed of following the Construction Waste Management Plan (Condition CON-PS-01).

3.2 Operation

Any solid waste generated operation of the solar arrays will be collected by the maintenance crews and transported to off-site to facilities that handle the disposal or recycling of these items. All operational waste will be handled according to the Operations Waste Management Plan (Condition OPR-PS-03) which will be consistent with Morrow County Solid Waste Management Ordinance Sections 5.020 and 5.030.

Spent batteries will be disposed at a facility permitted to handle them in compliance with applicable Resource Conservation and Recovery Act and Toxic Substances Control Act regulations administered by the U.S. Environmental Protection Agency or ODEQ (Condition OPR-PS-03).The batteries will be handled by a licensed third party battery suppliers in accordance with applicable regulations, as required through their licensure (Condition GEN-OE-04). Additionally, waste hauling by facility personnel within Morrow County will be performed in compliance with Morrow County Solid Waste Management Ordinance Section 5.000 Public Responsibilities and 5.030 Responsibility for Propose Disposal of Waste Hazard (Condition OPR-PS-03).

Some washing of solar panels may be conducted (see Exhibit O). The limited quantity of wash water will evaporate or will infiltrate into the ground near the point of use. No additional industrial wastewater streams will be generated during operation of the solar array. No additional structures, systems, or equipment are required for stormwater resulting from the addition of the solar arrays.

3.3 Retirement

Waste produced from retirement activities will be managed in a similar manner to the waste produced during construction and operation (see Sections 3.1 and 3.2). At the expected Facility life span of 50 years, an available solar array could still be capable of generating 80 to 85 percent of its initial capacity, in which case the solar array will be repurposed for use at other locations. Retirement of the Facility is described in Exhibit W. If continued reuse is not practical, the array will be dismantled and recycled to reclaim constituent parts, such as glass, aluminum, silicon solar cells, and metals. The distributed battery storage system will require disposal of the concrete container structures housing the batteries and their constituent parts. The batteries will be disposed of at retirement in the same manner described above for operational replacement.

3.4 Solid Waste Disposal Site

Solid waste generated by the Facility will be disposed of at the Finley Butte landfill in Morrow County. See Exhibit U for further discussion of landfills. Correspondence with the Finley Butte Sales Manager (Exhibit U, Attachment U-8) confirms that the Finley Butte Landfill has adequate capacity to handle the projected waste generated by construction, operation, and decommissioning of the Facility. During construction and operation, the Certificate Holder shall coordinate with its solid waste handler to provide the information solicited through ODEQ's Recycling Collector Survey to the Morrow County waste shed representative on an annual basis (Condition GEN-PS-01).

4.0 Actions or Restrictions to Reduce Consumptive Water Use – OAR 345-021-0010(1)(v)(C)

OAR 345-021-0010(1)(v)(C) A discussion of any actions or restrictions proposed by the applicant to reduce consumptive water use during construction and operation of the facility.

As discussed in the ASC, minimizing use of water for the Facility will be an important environmental consideration as the Facility moves into the construction phase. The Certificate Holder will use appropriate BMPs to reduce water use to the greatest extent feasible. Wind and solar energy facility construction by nature does not afford the construction contractor significant opportunities for reducing water use. Specific quantities of water must be used in making concrete, a minimal amount of water is required for the washing of concrete trucks and tools, and fugitive dust on surface roads must be controlled with water. In an effort to minimize water use, the Certificate Holder proposes the following:

- Weather and soil conditions will be regularly monitored to minimize watering the construction road while maintaining regulatory compliance for fugitive dust issues. Water for dust control would not be applied if weather conditions are such that disturbed soils will remain sufficiently damp and fugitive dust will not be created.

- Water will be applied only as needed in areas of active construction or vehicle movement, will be applied sparingly, and only at necessary intervals. Binders or tackifiers, such as magnesium chloride, may be used to lengthen the interval between necessary dust control water applications, if such additives are permitted by landowners and applicable regulations.
- During operation, the changes described in RFA 4 will result in additional water use for the purpose of periodic solar panel washing. Water used for solar panel washing will be limited to the minimum necessary for effective panel function.

5.0 Minimization and Recycling Plans – OAR 345-021-0010(1)(v)(D)

OAR 345-021-0010(1)(v)(D) The applicant's plans to minimize, recycle or reuse the solid waste and wastewater described in (A).

The changes described in this amendment request will result in additional solid waste in the form of potential solar array replacements during operation, and through decommissioning at the time of retirement. These materials will be recycled where practicable, and disposed at an approved disposal location where necessary (Condition PRE-WM-01). Water used for solar panel washing will be discharged for infiltration into the ground near the point of use, but will not be discharged into wetlands, streams, or other waterways. All operational waste would be handled according to the Operations Waste Management Plan (Condition OPR-PS-03).

6.0 Waste-Related Impacts

6.1 Description of Impacts – OAR 345-021-0010(1)(v)(E)

OAR 345-021-0010(1)(v)(E) A description of any adverse impact on surrounding and adjacent areas from the accumulation, storage, disposal and transportation of solid waste, wastewater and stormwater during construction and operation of the facility.

Solid waste, wastewater, and stormwater for the Facility will be generated and managed consistent with the methods and procedures that have been previously approved by the Council for the Facility, and through the Site Certificate Conditions discussed above. As a result, there will be no new, adverse impacts resulting from the changes proposed under RFA 4.

6.2 Evidence that Impacts are Minimal – OAR 345-021-0010(1)(v)(F)

OAR 345-021-0010(1)(v)(F) Evidence that adverse impacts described in (D) are likely to be minimal, taking into account any measures the applicant proposes to avoid, reduce or otherwise mitigate the impacts.

Generation of wastes from construction will be minimized by estimating material needs and employing efficient construction practices. Waste generated during construction and operation of the Facility will be recycled when feasible (Conditions PRE-WM-01 and OPR-PS-03).

Because waste generation will be minimal, there is little anticipated adverse impact on surrounding areas from solid waste or wastewater due to Facility construction, operation, or retirement. Waste will be reused or recycled, or when necessary, disposed at permitted disposal facilities. Any waste disposed on-site (e.g., excess spoils from foundation or road excavation) will be inert, disposed of in a manner consistent with applicable regulations, and protective of human health and the environment.

6.3 Proposed Monitoring Plan – OAR 345-021-0010(1)(v)(E)

OAR 345-021-0010(1)(v)(G) The applicant's proposed monitoring program, if any, for minimization of solid waste and wastewater impacts.

Because no significant, adverse impacts from waste or wastewater will occur in the adjacent or surrounding areas, no monitoring program is proposed. Waste management activities will be subject to periodic inspections to ensure compliance with applicable regulations and Site Certificate Conditions.

7.0 Conclusion

The evidence provided above demonstrates that the Council's Waste Minimization standard is met because waste generated as a result of the changes described in RFA 4 will be minimized, reused, or recycled where feasible, and because minimal adverse impacts on the surrounding or adjacent areas will result from the management of waste related to the Facility.

Exhibit W

Facility Retirement and Site Restoration

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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List of Attachments

Acronyms and Abbreviations

ASC	Application for Site Certificate
Certificate Holder	Wheatridge Wind Energy, LLC
Council	Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
OAR	Oregon Administrative Rules
ODOE	Oregon Department of Energy
RFA	Request for Amendment

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. In Request for Amendment (RFA) 4 to the Facility Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In RFA 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

Exhibit W provides the information required by Oregon Administrative Rules OAR 345-021-0010(1)(w) to demonstrate that the Facility, as proposed, complies with the Retirement and Financial Assurance standard required in Oregon Administrative Rules (OAR) 345-022-0050.

OAR 345-022-0050 Retirement and Financial Assurance

To issue a site certificate, the Council must find that:

(1) The site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the facility.

(2) The applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

To the extent it is representative of the best available information, analysis in this Exhibit incorporates and/or relies on reference information, analysis, and findings found in the Application for Site Certificate (ASC), previous RFAs[2], and Oregon Department of Energy (ODOE) Final Orders (ODOE 2017a, ODOE 2017b, Wheatridge 2015, Wheatridge 2017, Wheatridge 2018a, Wheatridge 2018b) to demonstrate that the Facility, as proposed, continues to comply with applicable Site Certificate conditions and the approval standard in OAR 345-022-0050. Under OAR 345-022-0050(1), before the Council will approve the proposed energy facility, it must find that the proposed Facility site can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the Facility. Information about site restoration and retirement of the Facility components, and the estimated costs of restoring the site, are based on the ODOE's *First Revised Cost Guide for Decommissioning Oregon Energy Facilities*.

The Council previously found in the Final Order on the Application and Final Order on Amendment 1, that the actions necessary to retire and restore the site are feasible and that retirement and restoration of the site to a useful, nonhazardous condition could be achieved (ODOE 2017a). RFA 2 and RFA 3 are currently under consideration by Council. RFA 2, which added energy storage to the facility, increased the estimated retirement cost by $279,000 to cover the cost of decommissioning the energy storage facility. RFA 3 modified the proposed turbine height and included a full recalculation of retirement cost based on modified number and size of turbines, and updated the estimate to Q3 2018 dollars, for a total of $19.173 million. Pending Council authorization of RFA 3, this cost estimate to retire the wind facility along with related or supporting facilities including the substation and energy storage is considered to be current and is not further updated with this amendment request.

The following Site Certificate Conditions apply to facility retirement:

- GEN-RF-01: Prevention of non-restorable site
- PRE-RF-01: Letter of credit to restore site to non-hazardous condition
- PRE-RF-02: Letter of credit naming State as payee
- RET-RF-01: Compliance with retirement plan
- RET-RF-02: Retirement of facility upon cessation of activities

[2] In May 2018, the Certificate Holder submitted RFA 2 and RFA 3 for the Facility. RFA 2 proposed adding two battery storage locations (one in Wheatridge East and one in Wheatridge West). RFA 3 proposed increasing the maximum turbine height allowed. Both of these requests are pending before the Council. The Certificate Holder assumes that by the time RFA 4 appears before the Council that RFA 2 and RFA 3 will have been approved; therefore, RFA 4 incorporates by reference the record from RFAs 2 and 3 to support approval of RFA 4. However, references to the Site Certificate are for the Amended Site Certificate for RFA 1, which is the authorized Site Certificate at the time of submittal of RFA 4.

2.0 Estimated Useful Life of the Facility – OAR 345-021-0010(1)(w)(A)

OAR 345-021-0010(1)(w) Information about site restoration, providing evidence to support a finding by the Council as required by OAR 345-022-0050(1). The applicant shall include:

OAR 345-021-0010(1)(w)(A) The estimated useful life of the proposed facility.

For the purposes of RFA 4, and as described and approved in the Final Order on the ASC (ODOE 2017a), the useful life of the Facility is estimated to be 50 years. At the end of that period, the Facility may be decommissioned; its useful life could be extended if equipment continues to function well with routine maintenance; or the Facility could be repowered with newer-generation equipment in the same locations. While retirement of the Facility is possible, the need for electricity generation and transmission, along with supporting facilities, is expected to increase into the foreseeable future.

3.0 Actions to Restore the Site – OAR 345-021-0010(1)(w)(B)

OAR 345-021-0010(1)(w)(B) Specific actions and tasks to restore the site to a useful, non-hazardous condition.

The Retirement Plan will include, pursuant to OAR 345-027-0110(5), the following information:

5) In the proposed final retirement plan, the certificate holder shall include:

(a) A plan for retirement that provides for completion of retirement without significant delay and that protects public health, safety and the environment.

(b) A description of actions the certificate holder proposes to take to restore the site to a useful, non-hazardous condition, including information on how impacts to fish, wildlife and the environment would be minimized during the retirement process.

(c) A current detailed cost estimate and a plan for ensuring the availability of adequate funds for completion of retirement.

(d) An updated list of the owners of property located within or adjacent to the site of the facility, as described in OAR 345-021-0010(1)(f).

In the ASC, the Certificate Holder provided a list of specific actions and tasks needed to remove wind turbines and related or supporting facilities and restore the site to a useful, non-hazardous condition. RFA 2 provided supplemental corresponding information for the energy storage site. This RFA 4 lists additional actions to be taken for the solar energy generating components of the Facility, in the unlikely event that the Certificate Holder elects to retire the Facility.

In accordance with Site Certificate Condition RET-RF-01, prior to retiring the Facility, the Certificate Holder will prepare a final Retirement Plan for approval by the Council. The proposed final

Retirement Plan will be submitted to the ODOE at least 90 days prior to Facility retirement, in accordance with Site Certificate Condition RET-RF-02. The Retirement Plan will describe the activities necessary to restore the site to a useful, nonhazardous condition, as described in OAR 345-027-0110(5). After Council approval of the Retirement Plan, the Certificate Holder will obtain the necessary authorization from the appropriate regulatory agencies to proceed with restoration of the site.

In addition to actions previously described for decommissioning of wind turbines and related or supporting facilities, the following specific actions will be taken to decommission the solar energy generating facilities:

- **Removal of all facilities.** Facilities to include perimeter fencing, the substation, module supports, modules, inverters, transformers and distributed energy storage systems. Underground electrical cable will be removed to its lateral depth; lateral runs are assumed to be a minimum of 3 feet deep, and will be abandoned in place.
- **Removal of foundations.** Concrete foundations for transformers and inverters are assumed to be slab on grade; thus, they will be removed in their entirety. For all foundation areas, the area will be filled with soil or gravel as part of site restoration.
- **Site Restoration.** Restoration of all Facility locations and access roads to a useful condition consistent with site zoning. This restoration will include restoring the site to a condition suitable for uses comparable with the surrounding land uses, intended land use, and then-current technologies.
- **Revegetation:** Vegetation will be restored to the maximum extent practicable, and all areas disturbed by construction shall be landscaped in a manner compatible with the surroundings and proposed use. In forested areas, the area would either be reforested or allow to regrow naturally.

4.0 Total Costs, Estimating Methods, and Assumptions

4.1 Estimate of Cost – OAR 345-021-0010(1)(w)(C)

OAR 345-021-0010(1)(w)(C) An estimate, in current dollars, of the total and unit costs of restoring the site to a useful, non-hazardous condition.

Attachment W-1 provides a detailed Facility retirement and restoration cost estimate for the solar generation facility components. The estimated cost of retirement and restoration for the solar facility is $7.772 million (in fourth-quarter 2018 dollars; see Attachment W-1). Combined with the prior estimates of $19.173 million for the wind turbines (see RFA 3) and $279,000 for the energy storage facility (see RFA 2), the total retirement and restoration cost estimate for the Facility as modified by RFA 4 is $27.224 million.

The Certificate Holder's ability to achieve the objectives of the Council's financial assurance rules is described in Exhibit M; Attachment M-2 demonstrates an ability to secure a letter of credit for $27.224 million towards the cost of site restoration.

4.2 Estimating Methods and Assumptions – OAR 345-021-0010(1)(w)(D)

OAR 345-021-0010(1)(w)(D) A discussion and justification of the methods and assumptions used to estimate site restoration costs.

The scope of work and individual tasks were established using professional experience, in collaboration with Certificate Holder's engineering staff and contractors. The Facility retirement is broken into individual tasks that were each estimated separately to include labor requirements, equipment needs, and duration. Production rates were established using professional experience and published standards that include RS Means[3]. Labor and equipment rates prevalent to the geographic area of the Facility were obtained based on U.S. Department of Labor wage determinations. After the estimate was completed, typical average markups that are industry standards were applied for contingency, overhead, and fee.

Estimating methods and assumptions specific to this estimate are as follows:

- Labor costs were developed by reviewing the U.S. Department of Labor wage determinations and rates published by RS Means. Using this method, an average rate is developed that includes base wage, fringe, and payroll tax liability. The final rate used in the estimate is an average of 40 hours of standard time and 10 hours of overtime per week, assuming a 50-hour work week during construction activities.
- Equipment rates used in the estimate are developed by reviewing rates published by RS Means and historical vendor quotes. Rates include fuel, maintenance, and wear and tear of ground engaging components. The rates assume the use of rental equipment, not owned equipment.
- Mobilization and demobilization costs are estimated to be approximately 2 percent of the overall contractor's costs. This reflects the actual cost to mobilize equipment, facilities, and crew to the Facility site, assuming the work is performed by local contractors. This amount does not include the front-loading of costs from other tasks.
- Restoration is estimated on a unit cost basis, priced by task that follows the progression of work from start to finish, as illustrated in Attachment W-1. Unit costs are developed by including the labor, equipment, and production rate required for each individual task. RS Means and estimator experience are utilized to establish the crew, equipment, and production for each individual task. Several other miscellaneous costs have been approximated, including permits, engineering, signage, fencing, traffic control, utility

[3] www.rsmeans.com

disconnects, etc. In the context of the overall estimate, these are incidental costs that are covered in the estimate's contingency.

- Roads would be restored pursuant to the Council-approved Retirement Plan so that they become a part of the natural surroundings and are no longer recognizable or usable as a road. On private lands, roads would be restored at the request of the current landowner.
- The cost for temporary facilities have been included in the restoration cost. These include an office trailer, two Conex storage units, portable toilets, first aid supplies, and utilities.
- Field management during construction activities has been added to the estimate. These include one Superintendent, one Health & Safety Representative and two Field Engineers. These positions are critical to the safe and successful execution of work.
- A contractor's Home Office, Project Management, Overhead, and Fee can vary widely by contractor. As such, averages were developed for the estimate and added as a percentage of total cost. These include 5 percent for Home Office and Project Management, 5 percent Contingency, and 15 percent for Overhead and Fee.

5.0 Monitoring Plan – OAR 345-021-0010(1)(w)(E)

OAR 345-021-0010(1)(w)(E) For facilities that might produce site contamination by hazardous materials, a proposed monitoring plan, such as periodic environmental site assessment and reporting, or an explanation why a monitoring plan is unnecessary.

In the event that the Certificate Holder elects to retire the Facility, the site could be restored to a useful, non-hazardous condition consistent with site zoning, including Exclusive Farm Use zoning. The Facility is not expected to cause site contamination with hazardous materials, and no contamination monitoring plan is proposed. The existing facilities could be removed without significant risk of contamination.

Hazardous materials associated with the Facility would largely be limited to oils in turbine gearboxes and transformers, which would be pumped out to a specialized vehicle for recycling prior to removing the equipment. The proposed Facility would not have any underground storage tanks or on-site bulk storage of hazardous materials. Small quantities of lubricants, vehicle fuel, and herbicides might be transported over and across the site during operation, and leaks, spills and improper handling of these materials could occur. Given the small amounts of such materials used at the Facility site, soil contamination is highly unlikely, and therefore a monitoring plan is unnecessary.

6.0 References

ODOE (Oregon Department of Energy). 2017a. Final Order in the Matter of the Application for a Site Certificate for the Wheatridge Wind Energy Facility. April 2017.

ODOE. 2017b. Final Order in the Matter of the Request for Transfer (Amendment #1) for the Wheatridge Wind Energy Facility. July 2017.

Wheatridge (Wheatridge Wind Energy, LLC). 2015. Wheatridge Wind Energy Facility Application for Site Certificate. Prepared by Tetra Tech, Inc. July 2015.

Wheatridge. 2017. Wheatridge Wind Energy Facility Request for Amendment 1. Prepared by Tetra Tech, Inc. July 2017.

Wheatridge. 2018a. Wheatridge Wind Energy Facility Request for Amendment 2. Prepared by Tetra Tech, Inc. September 2018.

Wheatridge. 2018b. Wheatridge Wind Energy Facility Request for Amendment 3. Prepared by Tetra Tech, Inc. September 2018.

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Attachment W-1. Wheatridge Solar Decommissioning Estimate

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Estimate Summary
TETRA TECH EC, INC.
Job Code: Wheatridge Solar
Description: Decommissioning Estimate

CBS Position Code	Quantity	UM	Description	Days	UM/Day	Cost Source	Currency	Unit Cost	Total Cost
1	1.00	Lump Sum	WHEATRIDGE SOLAR RETIREMENT	785.32	0.00	Detail	U.S. Dollar	7,771,796.61	7,771,796.61
1.1	1.00	Lump Sum	Mob / Demob	5.00	0.20	Detail	U.S. Dollar	123,728.59	123,728.59
1.1.1	1.00	Lump Sum	Equipment Mob	0.00	0.00	Detail	U.S. Dollar	61,200.00	61,200.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
UERNTRLG	Rental Equip Transp-Large		6.00	Each	U.S. Dollar	10,000.00	60,000.00
UERNTRSM	Rental Equip Transp-Small		8.00	Each	U.S. Dollar	150.00	1,200.00

1.1.2	1.00	Lump Sum	Site Facilities	0.00	0.00	Detail	U.S. Dollar	2,200.00	2,200.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
UOCONMOB	Connex Box Mob		2.00	Each	U.S. Dollar	300.00	600.00
UOTRLTRN	Trailer Trnsp/Setup/Trdwn		2.00	Each	U.S. Dollar	800.00	1,600.00

1.1.3	3.00	Day	Crew Mob & Site Setup	3.00	1.00	Detail	U.S. Dollar	12,065.72	36,197.15

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	720.00	24.00	Each (hourly)	U.S. Dollar	38.04	27,386.82
L010101	OPERATOR	180.00	6.00	Each (hourly)	U.S. Dollar	48.95	8,810.33

1.1.4	2.00	Day	Crew Demob & Site Cleanup	2.00	1.00	Detail	U.S. Dollar	12,065.72	24,131.44

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	480.00	24.00	Each (hourly)	U.S. Dollar	38.04	18,257.88
L010101	OPERATOR	120.00	6.00	Each (hourly)	U.S. Dollar	48.95	5,873.56

1.2	8.00	Month	Site Facilities	0.00	0.00	Detail	U.S. Dollar	2,155.00	17,240.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
URCONNEX	Connex Box		16.00	Month	U.S. Dollar	150.00	2,400.00
UROFFTRL	Office Trailer -12x60		8.00	Month	U.S. Dollar	500.00	4,000.00
UO1STAID	1st Aid Supplies		8.00	Month	U.S. Dollar	300.00	2,400.00
UOOFFPHN	Monthly Office Phone		8.00	Month	U.S. Dollar	500.00	4,000.00
UOOFFSUP	Office Supplies($/prs/mo)		8.00	Month	U.S. Dollar	55.00	440.00
UINT	Internet		8.00	Month	U.S. Dollar	200.00	1,600.00
URPRTAJH	Port-a-John Unit(s) (4)		8.00	Month	U.S. Dollar	300.00	2,400.00

1.3	32.00	Week	Field Management	192.00	0.17	Detail	U.S. Dollar	21,851.73	699,255.40

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L90FXX02	Field - Proj Superintendent	1,920.00	1.00	Each (hourly)	U.S. Dollar	83.18	159,709.44
RPUTRK05	F-250 4X4 3/4 TON PICKUP	9,600.00	5.00	Each (hourly)	U.S. Dollar	11.07	106,224.00
L90FEL00	Field - Engr. Tech	1,920.00	1.00	Each (hourly)	U.S. Dollar	39.57	75,982.12
L90FXX03	Field - SHSO	1,920.00	1.00	Each (hourly)	U.S. Dollar	89.26	171,386.69
L90FEJ00	Field - Asst. Engr.	3,840.00	2.00	Each (hourly)	U.S. Dollar	48.43	185,953.15

1.4	1.00	Lump Sum	Substation Retirement	30.95	0.03	Detail	U.S. Dollar	271,108.50	271,108.50
1.4.1	1.00	Day	Fence Removal	1.00	1.00	Detail	U.S. Dollar	1,202.19	1,202.19

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L010101	OPERATOR	10.00	1.00	Each (hourly)	U.S. Dollar	48.95	489.46
L060100	GENERAL LABORER	10.00	1.00	Each (hourly)	U.S. Dollar	38.04	380.37
RBACKH09	Deere 710J BACKHOE, 1.62CY	10.00	1.00	Each (hourly)	U.S. Dollar	33.24	332.35

1.4.2	2.00	Each	Transformer Removal	12.00	0.17	Detail	U.S. Dollar	91,639.33	183,278.65

CBS Position Code	Quantity	UM	Description	Days	Cost UM/Day	Cost Source	Currency	Unit Cost	Total Cost
			Cost Item						
1.4.2.1	2.00	Each	Oil Removal & Disposal	2.00	1.00	Detail	U.S. Dollar	58,135.75	116,271.49
1.4.2.1.1	2.00	Each	Oil Removal	2.00	1.00	Detail	U.S. Dollar	760.75	1,521.49

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	40.00	2.00	Each (hourly)	U.S. Dollar	38.04	1,521.49

1.4.2.1.2	28,000.00	Gallon	Oil Disposal	0.00	0.00	Detail	U.S. Dollar	4.00	112,000.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		112,000.00	Each	U.S. Dollar	1.00	112,000.00

1.4.2.1.3	2.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	2,750.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		2,750.00	Each	U.S. Dollar	1.00	2,750.00

1.4.2.2	2.00	Each	Dismantle & Loadout Transformer	10.00	0.20	Detail	U.S. Dollar	33,503.58	67,007.16
1.4.2.2.1	2.00	Each	Dismantle, Cut & Size	10.00	0.20	Detail	U.S. Dollar	28,003.58	56,007.16

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	400.00	4.00	Each (hourly)	U.S. Dollar	38.04	15,214.90
L010101	OPERATOR	200.00	2.00	Each (hourly)	U.S. Dollar	48.95	9,789.26
*REXCAV06A	Excav 100K w/ Bucket & Grapple	100.00	1.00	Each (hourly)	U.S. Dollar	124.54	12,453.50
*REXCAV06E	Excav 100K w/ Shear	100.00	1.00	Each (hourly)	U.S. Dollar	185.50	18,549.50

1.4.2.2.2	8.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	11,000.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		11,000.00	Each	U.S. Dollar	1.00	11,000.00

1.4.3	1.00	Each	Remove Control Building	0.50	2.00	Detail	U.S. Dollar	2,432.59	2,432.59
1.4.3.1	1.00	Each	Demo	0.50	2.00	Detail	U.S. Dollar	1,057.59	1,057.59

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	5.00	1.00	Each (hourly)	U.S. Dollar	38.04	190.19
L010101	OPERATOR	5.00	1.00	Each (hourly)	U.S. Dollar	48.95	244.73
*REXCAV06A	Excav 100K w/ Bucket & Grapple	5.00	1.00	Each (hourly)	U.S. Dollar	124.54	622.68

1.4.3.2	1.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	1,375.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		1,375.00	Each	U.S. Dollar	1.00	1,375.00

1.4.4	2.00	Day	UG Utility & Ground Removal	2.00	1.00	Detail	U.S. Dollar	1,202.19	2,404.37

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L010101	OPERATOR	20.00	1.00	Each (hourly)	U.S. Dollar	48.95	978.93
L060100	GENERAL LABORER	20.00	1.00	Each (hourly)	U.S. Dollar	38.04	760.75
RBACKH09	Deere 710J BACKHOE, 1.62CY	20.00	1.00	Each (hourly)	U.S. Dollar	33.24	664.70

1.4.5	500.00	Cubic Yard	Remove Foundations To Subgrade	6.79	73.68	Detail	U.S. Dollar	27.02	13,512.25
1.4.5.1	500.00	Cubic Yard	Excavate / Remove Foundation - Various Depth	1.79	280.00	Detail	U.S. Dollar	15.05	7,525.53

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L060100	GENERAL LABORER	17.86	1.00	Each (hourly)	U.S. Dollar	38.04	679.24

CBS Position Code	Quantity	UM	Description	Cost Item Days	UM/Day	Cost Source	Currency	Unit Cost	Total Cost
L010101	OPERATOR			35.71	2.00	Each (hourly)	U.S. Dollar	48.95	1,748.08
*REXCAV06C	Excav 100K w/ Hammer			17.86	1.00	Each (hourly)	U.S. Dollar	160.97	2,874.38
*REXCAV06A	Excav 100K w/ Bucket & Grapple			17.86	1.00	Each (hourly)	U.S. Dollar	124.54	2,223.84
1.4.5.2	500.00	Cubic Yard	Concrete Transport Offsite	5.00	100.00	Detail	U.S. Dollar	11.97	5,986.72
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
RDUTRK06	CAT D350D, 18CY-24CY			50.00	1.00	Each (hourly)	U.S. Dollar	74.29	3,714.50
L080940	TEAMSTER			50.00	1.00	Each (hourly)	U.S. Dollar	45.44	2,272.22
1.4.6	1.00	Lump Sum	Misc. Material Disposal	0.00	0.00	Detail	U.S. Dollar	1,675.00	1,675.00
1.4.6.1	1.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	1,375.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
USTRUCKING	Trucking Sub				1,375.00	Each	U.S. Dollar	1.00	1,375.00
1.4.6.2	10.00	Ton	Disposal Cost	0.00	0.00	Detail	U.S. Dollar	30.00	300.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
USDISPOSAL	Disposal Fee's				300.00	Each	U.S. Dollar	1.00	300.00
1.4.7	1.00	Lump Sum	Restore Yard	8.67	0.12	Detail	U.S. Dollar	66,603.46	66,603.46
1.4.7.1	4.00	Acre	Backfill / Regrade	2.00	2.00	Detail	U.S. Dollar	1,540.15	6,160.62
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
L060100	GENERAL LABORER			40.00	2.00	Each (hourly)	U.S. Dollar	38.04	1,521.49
L010101	OPERATOR			40.00	2.00	Each (hourly)	U.S. Dollar	48.95	1,957.85
REXCAV06B	Gradall - Excavator			20.00	1.00	Each (hourly)	U.S. Dollar	75.73	1,514.57
*RDOZER08	CAT D6 LGP Dozer			20.00	1.00	Each (hourly)	U.S. Dollar	58.34	1,166.70
1.4.7.2	2,000.00	Cubic Yard	Vegetative Cover	6.67	300.00	Detail	U.S. Dollar	27.22	54,442.84
1.4.7.2.1	2,000.00	Cubic Yard	Topsoil, Delivered	0.00	0.00	Detail	U.S. Dollar	20.00	40,000.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
IMSOIL	Topsoil				2,000.00	Cubic Yard	U.S. Dollar	20.00	40,000.00
1.4.7.2.2	2,000.00	Cubic Yard	Placement	6.67	300.00	Detail	U.S. Dollar	7.22	14,442.84
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
L010101	OPERATOR			133.33	2.00	Each (hourly)	U.S. Dollar	48.95	6,526.17
RDOZER08	CAT D6N XL			133.33	2.00	Each (hourly)	U.S. Dollar	59.38	7,916.67
1.4.7.3	4.00	Acre	Re-Seed With Native Vegetation	0.00	0.00	Detail	U.S. Dollar	1,500.00	6,000.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
USLANDSCAPE	Landscape Sub				4.00	Acre	U.S. Dollar	1,500.00	6,000.00
1.5	1.00	Lump Sum	Solar Array Retirement	411.61	0.00	Detail	U.S. Dollar	4,323,139.70	4,323,139.70
1.5.1	102,496.00	Linear Feet	Fence Removal	20.00	5,124.80	Detail	U.S. Dollar	0.93	94,953.48
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**
L010101	OPERATOR			600.00	3.00	Each (hourly)	U.S. Dollar	48.95	29,367.78
L060100	GENERAL LABORER			1,200.00	6.00	Each (hourly)	U.S. Dollar	38.04	45,644.70
RBACKH09	Deere 710J BACKHOE, 1.62CY			600.00	3.00	Each (hourly)	U.S. Dollar	33.24	19,941.00
1.5.2	41.00	Each	Inverter / Transformer Removal	82.00	0.50	Detail	U.S. Dollar	5,779.67	236,966.43
1.5.2.1	41.00	Each	Disconnect Electrical	41.00	1.00	Detail	U.S. Dollar	1,050.92	43,087.56
Resource Code	**Description**			**Hours**	**Quantity**	**UM**	**Currency**	**Unit Cost**	**Total Cost**

Cost Item									
CBS Position Code	Quantity	UM	Description		Days	UM/Day	Cost Source	Currency	Unit Cost	Total Cost
L010110	ELECTRCIAN			410.00	1.00	Each (hourly)		U.S. Dollar	55.99	22,955.63
L060100	GENERAL LABORER			410.00	1.00	Each (hourly)		U.S. Dollar	38.04	15,595.27
RPUTRK05	F-250 4X4 3/4 TON PICKUP			410.00	1.00	Each (hourly)		U.S. Dollar	11.07	4,536.65
1.5.2.2	41.00	Each	Loadout Inverter & Transformer		41.00	1.00	Detail	U.S. Dollar	2,663.75	109,213.87
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
L060100	GENERAL LABORER			1,640.00	4.00	Each (hourly)		U.S. Dollar	38.04	62,381.09
L010101	OPERATOR			410.00	1.00	Each (hourly)		U.S. Dollar	48.95	20,067.98
RHYDCR06	GROVE RT880 73 TON			410.00	1.00	Each (hourly)		U.S. Dollar	65.28	26,764.80
1.5.2.3	41.00	Each	Trucking - Per Load		0.00	0.00	Detail	U.S. Dollar	1,375.00	56,375.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
USTRUCKING	Trucking Sub				56,375.00	Each		U.S. Dollar	1.00	56,375.00
1.5.2.4	943.00	Ton	Disposal Cost		0.00	0.00	Detail	U.S. Dollar	30.00	28,290.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
USDISPOSAL	Disposal Fee's				28,290.00	Each		U.S. Dollar	1.00	28,290.00
1.5.3	41.00	Each	Remove Foundations To Subgrade		53.42	0.77	Detail	U.S. Dollar	2,594.35	106,368.42

Notes: **********
Assumption: 24x36x1 concrete pad per inverter/
transformer/DC storage location.
****

1.5.3.1	3,936.00	Cubic Yard	Excavate / Remove Foundation		14.06	280.00	Detail	U.S. Dollar	15.05	59,241.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
L060100	GENERAL LABORER			140.57	1.00	Each (hourly)		U.S. Dollar	38.04	5,346.95
L010101	OPERATOR			281.14	2.00	Each (hourly)		U.S. Dollar	48.95	13,760.90
*REXCAV06C	Excav 100K w/ Hammer			140.57	1.00	Each (hourly)		U.S. Dollar	160.97	22,627.08
*REXCAV06A	Excav 100K w/ Bucket & Grapple			140.57	1.00	Each (hourly)		U.S. Dollar	124.54	17,506.06
1.5.3.2	3,936.00	Cubic Yard	Concrete Transport Offsite		39.36	100.00	Detail	U.S. Dollar	11.97	47,127.42
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
RDUTRK06	CAT D350D, 18CY-24CY			393.60	1.00	Each (hourly)		U.S. Dollar	74.29	29,240.54
L080940	TEAMSTER			393.60	1.00	Each (hourly)		U.S. Dollar	45.44	17,886.88
1.5.4	41.00	Each	DC Storage System Removal		94.30	0.43	Detail	U.S. Dollar	10,793.47	442,532.32
1.5.4.1	123.00	MW	Battery Removal & Disposal		82.00	1.50	Detail	U.S. Dollar	2,525.49	310,635.68
1.5.4.1.1	82.00	Day	Remove Batteries, Load For Transport		82.00	1.00	Detail	U.S. Dollar	1,737.94	142,511.08
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
L060100	GENERAL LABORER			3,280.00	4.00	Each (hourly)		U.S. Dollar	38.04	124,762.18
RLIFTS05	JCB 508C, 8,000lbs FRKLFT			820.00	1.00	Each (hourly)		U.S. Dollar	21.65	17,748.90
1.5.4.1.2	41.00	Each	Transport Batteries		0.00	0.00	Detail	U.S. Dollar	1,480.60	60,704.60
1.5.4.1.2.1	41.00	Each	Roll Off Liners		0.00	0.00	Detail	U.S. Dollar	105.60	4,329.60
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**
UODCLINER	Rolloff Liner				41.00	Each		U.S. Dollar	105.60	4,329.60
1.5.4.1.2.2	41.00	Each	Trucking - Per Load		0.00	0.00	Detail	U.S. Dollar	1,375.00	56,375.00
Resource Code	**Description**			**Hours**	**Quantity**	**UM**		**Currency**	**Unit Cost**	**Total Cost**

CBS Position Code	Quantity	UM	Description	Cost Item Days	UM/Day	Cost Source	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub			56,375.00	Each		U.S. Dollar	1.00	56,375.00
1.5.4.1.3	537.10	Ton	Disposal Fee's	0.00	0.00	Detail	U.S. Dollar	200.00	107,420.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		107,420.00	Each	U.S. Dollar	1.00	107,420.00

1.5.4.2	123.00	MW	Structure & Components Removal	12.30	10.00	Detail	U.S. Dollar	1,072.33	131,896.64
1.5.4.2.1	533.00	Ton	Structure Demo	12.30	43.33	Detail	U.S. Dollar	111.69	59,531.64
1.5.4.2.2	41.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	56,375.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		56,375.00	Each	U.S. Dollar	1.00	56,375.00

1.5.4.2.3	533.00	Ton	Disposal Cost	0.00	0.00	Detail	U.S. Dollar	30.00	15,990.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		15,990.00	Each	U.S. Dollar	1.00	15,990.00

1.5.5	1.00	Lump Sum	Solar Panel Removal	86.89	0.01	Detail	U.S. Dollar	1,921,677.75	1,921,677.75
1.5.5.1	417,093.00	Each	Solar Panel Removal	86.89	4,800.00	Detail	U.S. Dollar	2.78	1,161,292.75

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
RLIFTS05	JCB 508C, 8,000lbs FRKLFT	5,213.66	6.00	Each (hourly)	U.S. Dollar	21.65	112,849.72
L010101	OPERATOR	5,213.66	6.00	Each (hourly)	U.S. Dollar	48.95	255,189.49
L060100	GENERAL LABORER	20,854.65	24.00	Each (hourly)	U.S. Dollar	38.04	793,253.54

Notes: **********
Assumed production: 20 panels per laborer per hour, includes packaging and preparing for shipment offsite.
****

1.5.5.2	371.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	510,125.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		510,125.00	Each	U.S. Dollar	1.00	510,125.00

Notes: **********
Assumption: 45,000 lbs per load
****

1.5.5.3	8,342.00	Ton	Disposal Cost	0.00	0.00	Detail	U.S. Dollar	30.00	250,260.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		250,260.00	Each	U.S. Dollar	1.00	250,260.00

Notes: **********
Assumption: 417,096 modules x 40 lbs each
****

1.5.6	1.00	Lump Sum	Solar Rack (Trackers) & Post Removal	75.00	0.01	Detail	U.S. Dollar	1,507,116.30	1,507,116.30
1.5.6.1	6,000.00	Each	Solar Rack (Trackers) & Post Removal	75.00	80.00	Detail	U.S. Dollar	242.00	1,451,991.30

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
L010101	OPERATOR	6,000.00	8.00	Each (hourly)	U.S. Dollar	48.95	293,677.80
L060100	GENERAL LABORER	6,000.00	8.00	Each (hourly)	U.S. Dollar	38.04	228,223.50
*REXCAV06A	Excav 100K w/ Bucket & Grapple	3,000.00	4.00	Each (hourly)	U.S. Dollar	124.54	373,605.00
*REXCAV06E	Excav 100K w/ Shear	3,000.00	4.00	Each (hourly)	U.S. Dollar	185.50	556,485.00

CBS Position Code	Quantity	UM	Description	Cost Item Days	Cost UM/Day	Cost Source	Currency	Unit Cost	Total Cost

Notes: **********
Assumed production: .5 hour per rack per crew. Crew to include 1 excavator w/shear, 1 excavator w/grapple, 2 operators and 2 laborers. Includes post removal and sizing of steel for sale as scrap, and loadout to haul trucks.
****

1.5.6.2	27.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	37,125.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		37,125.00	Each	U.S. Dollar	1.00	37,125.00

Notes: **********
Assumption: 45,000 lbs per load
****

1.5.6.3	600.00	Ton	Disposal Cost	0.00	0.00	Detail	U.S. Dollar	30.00	18,000.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		18,000.00	Each	U.S. Dollar	1.00	18,000.00

Notes: **********
Assumption: 6000 racks x 200 lbs each
****

1.5.7	7.00	Each	Trucking - Per Load	0.00	0.00	Detail	U.S. Dollar	1,375.00	9,625.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USTRUCKING	Trucking Sub		9,625.00	Each	U.S. Dollar	1.00	9,625.00

1.5.8	130.00	Ton	Disposal Cost	0.00	0.00	Detail	U.S. Dollar	30.00	3,900.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USDISPOSAL	Disposal Fee's		3,900.00	Each	U.S. Dollar	1.00	3,900.00

1.6	1.00	Lump Sum	Site Restoration	145.76	0.01	Detail	U.S. Dollar	681,735.72	681,735.72

1.6.1	72,804.00	Linear Feet	Decompact Roads	91.01	800.00	Detail	U.S. Dollar	2.68	195,262.69

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
*RDOZER08	CAT D6 LGP Dozer	1,820.10	2.00	Each (hourly)	U.S. Dollar	58.34	106,175.53
L010101	OPERATOR	1,820.10	2.00	Each (hourly)	U.S. Dollar	48.95	89,087.16

Notes: **********
Decompaction to include discing and regrading
****

1.6.2	219.00	Acre	Spot Grade Disturbed Areas	54.75	4.00	Detail	U.S. Dollar	536.41	117,473.02

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
*RDOZER08	CAT D6 LGP Dozer	1,095.00	2.00	Each (hourly)	U.S. Dollar	58.34	63,876.83
L010101	OPERATOR	1,095.00	2.00	Each (hourly)	U.S. Dollar	48.95	53,596.20

Notes: **********
Assumtion: 2212 acres total property area.
27 acres of roads, and 2185 acres of remaining area.
Assume that10% of the remaining area distrubed by construction will be regraded.
****

1.6.3	246.00	Acre	Re-Seed With Native Vegetation - Roads & Areas Disturbed By Construction	0.00	0.00	Detail	U.S. Dollar	1,500.00	369,000.00

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USLANDSCAPE	Landscape Sub		246.00	Acre	U.S. Dollar	1,500.00	369,000.00

CBS Position Code	Quantity	UM	Description	Cost Item Days	Cost UM/Day	Cost Source	Currency	Unit Cost	Total Cost

Notes: **********

Assumtion: 2212 acres total property area.
27 acres of roads, and 2185 acres of remaining area.
Assume that 27 acres of road area to be reseeded, and 10%
of the remaining area distrubed by construction will be reseeded.
246 acres total to be reseeded.

****

1.7	1.00	Lump Sum	Home Office, Project Management (5% Of Cost)	0.00	0.00	Detail	U.S. Dollar	309,022.60	309,022.60

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USMARKUP5	5% Markup		6,180,452.00	Each	U.S. Dollar	0.05	309,022.60

1.8	1.00	Lump Sum	Contractor Contingency (5% Of Cost)	0.00	0.00	Detail	U.S. Dollar	324,473.75	324,473.75

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USMARKUP5	5% Markup		6,489,475.00	Each	U.S. Dollar	0.05	324,473.75

1.9	1.00	Lump Sum	Contractor OH & Fee (15% Of Cost)	0.00	0.00	Detail	U.S. Dollar	1,022,092.35	1,022,092.35

Resource Code	Description	Hours	Quantity	UM	Currency	Unit Cost	Total Cost
USMARKUP	15% Markup		6,813,949.00	Each	U.S. Dollar	0.15	1,022,092.35

Report Total:				785.32					7,771,796.61

Category	Total
Labor	2,789,830.12
Rented Equipment	1,556,548.19
Supplies	7,169.60
Materials	40,000.00
Subcontract	3,370,448.70
ODCs	7,800.00

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Exhibit X

Noise

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

Tetra Tech, Inc.

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Exhibit X will be completed as part of a supplemental submittal.

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Exhibit CC

Applicable Statutes, Rules, and Local Government Ordinances

Wheatridge Wind Energy Facility
November 2018

Prepared for

Prepared by

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Table of Contents

Acronyms and Abbreviations

Certificate Holder	Wheatridge Wind Energy, LLC
Council	Oregon Energy Facility Siting Council
Facility	Wheatridge Wind Energy Facility
MW	megawatts
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statutes

1.0 Introduction

The Wheatridge Wind Energy Facility (Facility) is an approved, but not yet constructed, wind energy generation facility consisting of up to 292 turbines with a peak generating capacity of up to 500 megawatts (MW), to be located in an Approved Site Boundary of approximately 13,097 acres in Morrow and Umatilla counties, Oregon. As part of Request for Amendment 4 to the Facility's Site Certificate, Wheatridge Wind Energy, LLC (Certificate Holder) is proposing to add photovoltaic solar energy generation to the Facility to provide the opportunity for an integrated, renewable energy facility with both wind and solar energy generation and energy storage. In the Request for Amendment 4, the Certificate Holder is proposing five changes to the approved Facility:

1. Amend the description of the Facility to include photovoltaic solar energy generation equipment to leverage the complementary nature of wind and solar generation to provide more reliable renewable energy generation.
2. Amend the Site Boundary to provide for solar micrositing corridors[1] for the photovoltaic solar energy system.
3. Increase the maximum peak generating capacity for the Facility by up to 150 MW of solar energy generation, for a total Facility maximum peak generating capacity of 650 MW.
4. Add distributed energy storage as a related or supporting facility for solar energy generation, along with new collector lines connecting the solar arrays, and an expansion of an approved substation.
5. Extend the construction completion deadline by approximately 6 months from May 24, 2023 to December 31, 2023 to provide for additional construction time for the Facility, if needed.

The Energy Facility Siting Council (Council) previously found the Certificate Holder has demonstrated an ability to construct, operate, and retire the Facility in compliance with Council standards and all other laws and conditions of the Site Certificate. This exhibit, Exhibit CC, provides information about permits needed for construction and operation of the Facility, as proposed, to meet the submittal requirements of Oregon Administrative Rule (OAR) 345-021-0010(1)(cc). While OAR 345 Division 22 does not provide an approval standard specific to Exhibit CC, permits identified in this exhibit are identified in each applicable exhibit and incorporated into the Site Certificate Conditions, as necessary, to meet Council standards and other laws governed by the Site Certificate.

[1] Per OAR 345-001-0010(32) "micrositing corridor" means a continuous area of land within which construction of facility components may occur, subject to site certificate conditions.

2.0 Additional Statutes and Administrative Rules – OAR 345-021-0010(cc)

OAR 345-021-0010(cc) Identification, by legal citation, of all state statutes and administrative rules and local government ordinances containing standards or criteria that the proposed facility must meet for the Council to issue a site certificate, other than statutes, rules and ordinances identified in Exhibit E, and identification of the agencies administering those statutes, administrative rules and ordinances. The applicant shall identify all statutes, administrative rules and ordinances that the applicant knows to be applicable to the proposed facility, whether or not identified in the project order. To the extent not addressed by other materials in the application, the applicant shall include a discussion of how the proposed facility meets the requirements of the applicable statutes, administrative rules and ordinances.

This section identifies by legal citation and relevant administering agency the state statutes and administrative rules and local government ordinances referenced in other Exhibits, with the exception of those presented in Exhibit E. The identified statutes, rules, and ordinances contain standards or criteria that the Facility, as proposed, must meet for the Council to amend the Facility's Site Certificate.

Responsible Agency: Oregon Department of Agriculture
Authority: Plant Conservation Biology Program - Oregon Revised Statutes (ORS) 564; OAR Chapter 603, Division 73
Location of Discussion: Exhibit Q
Agency Address: Department of Botany and Plant Pathology Cordley Hall, Oregon State University Corvallis, OR 97331 Administrative address: 635 Capitol Street NE Salem, OR 97301

Responsible Agency: Oregon Department of Fish and Wildlife
Authority: Habitat Conservation - ORS 496.171-192, OAR 635-100-0080-0170, OAR Chapter 635, Divisions 44, 100
Location of Discussion: Exhibit Q
Agency Address: Oregon Department of Fish and Wildlife 2042 SE Paulina Road Prineville, OR 97754

Responsible Agency: Oregon Department of Fish and Wildlife
Authority: Habitat Conservation - OAR Chapter 635 Division 415
Location of Discussion: Exhibit P
Agency Address: Oregon Department of Fish and Wildlife 2042 SE Paulina Road Prineville, OR 97754

Responsible Agency: Oregon Department of Fish and Wildlife
Authority: Habitat Conservation - ORS 496 and 506; OAR Chapter 635, Divisions 100 and 415
Location of Discussion: Exhibit K
Agency Address: Oregon Department of Fish and Wildlife 2042 SE Paulina Road Prineville, OR 97754

Responsible Agency: Oregon Department of Geology and Mineral Industries
Authority: Department of Geology and Mineral Industries Administrative Rules - OAR Chapter 632
Location of Discussion: Exhibits H and I
Agency Address: Oregon Department of Geology and Mineral Industries 800 NE Oregon Street, Suite 965 Portland, OR 97232

Responsible Agency: Oregon Department of Parks and Recreation - Archaeological
Authority: Native American Graves and Protected Objects - ORS 97.740-97.760; Archaeological Objects and Sites - ORS 358.905-358.955; Archaeological Permits - OAR 736-051-0090
Location of Discussion: Exhibit S
Agency Address: State Historic Preservation Office 725 Summer Street NE, Suite C Salem, OR 97301

Responsible Agency: Oregon Office of State Fire Marshal - Emergency Planning and Community Right-to-Know Act
Authority: Radiation Sources; Hazardous Substances - ORS 453; OAR Chapter 837, Divisions 85 and 95
Location of Discussion: Exhibits B, C, and U
Agency Address: Oregon Office of State Fire Marshall 4760 Portland Road NE Salem, OR 97305

Responsible Agency: Oregon Office of State Fire Marshal
Authority: Fire and Life Safety Regulations - OAR Chapter 837, Division 40
Location of Discussion: Exhibits B, C, and U
Agency Address: Oregon Office of State Fire Marshall 4760 Portland Road NE Salem, OR 97305

Responsible Agency: Oregon Department of Environmental Quality
Authority: Noise Control Regulations - ORS 467; OAR Chapter 340, Division 35
Location of Discussion: Exhibit X
Contact Information: No contacts. The Oregon Department of Environmental Quality Noise Control Program was terminated in 1991.

Responsible Agency: Oregon Department of Environmental Quality
Authority: Water Quality - ORS 468 and 468B; OAR Chapter 340, Divisions 14, 40,41, 45, 52 and 55
Location of Discussion: Exhibit V
Agency Address: Oregon Department of Environmental Quality – Water Quality 475 NE Bellevue Drive, Suite 110 Bend, OR 97701

Responsible Agency: Oregon Department of Environmental Quality
Authority: Solid Waste - ORS 459; OAR Chapter 340, Division 93
Location of Discussion: Exhibits G and V
Agency Address: Oregon Department of Environmental Quality – Solid Waste 475 NE Bellevue Drive, Suite 110 Bend, OR 97701

Responsible Agency: Oregon Department of Environmental Quality
Authority: Hazardous Waste Management - ORS 465 and 466, OAR Chapter 340, Divisions 100 through 122
Location of Discussion: Exhibit V
Agency Address: Oregon Department of Environmental Quality – Hazardous Waste Management 475 NE Bellevue Drive, Suite 110 Bend, OR 97701

Responsible Agency: Morrow County Planning Department – Land Use
Authority: Morrow County Zoning Ordinance Articles 1 – 10
Location of Discussion: Exhibit K
Agency Address: Morrow County 205 NE 3rd Street Irrigon, OR 97844

Responsible Agency: Oregon Biodiversity Information Center
Authority: ORS 564.105; OAR 603-73-070 and 345-022-0070
Location of Discussion: Exhibits P and Q
Agency Address: Oregon Biodiversity Center Oregon State University Institute for Natural Resources University Center Building 527 SW Hall Street, Suite 335 Portland, OR 97201

Responsible Agency: Oregon Water Resources Department – Water Rights Division
Authority: Appropriation of Water Generally - ORS Chapter 537; Distribution of Water Watermasters; Change in Use; Transfer or Forfeiture of Water Rights - ORS Chapter 540; Water Resources Administrative Rules - OAR Chapter 690
Location of Discussion: Exhibit O
Agency Address: Department of Water Resources Commerce Building 158 12th Avenue NE Salem, OR 97301

Responsible Agency: Oregon Department of State Lands
Authority: Department of State Lands - OAR Chapter 141 and ORS 196.795-196.990
Location of Discussion: Exhibit J
Agency Address: Oregon Department of State Lands 775 Summer Street NE, Suite 100 Salem, OR 97301

Responsible Agency: Oregon Department of Land Conservation and Development
Authority: Comprehensive Land Use Planning Coordination - ORS Chapter 197; Oregon Department of Land Conservation and Development Administrative Rules - OAR Chapter 660
Location of Discussion: Exhibit K
Agency Address: Department of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, OR 97301

Exhibit K identifies state statutes, administrative rules, and local government ordinances containing land use standards or criteria that the Certificate Holder believes may be applicable to the Facility as modified by RFA 4.

3.0 Spill Response Statutes

In regards to reporting and responding to spills or the release of hazardous materials, the following rules and statutes contain state and federal release reporting requirements:

- ORS 466.635;
- OAR Chapter 340, Divisions 45, 47, 108, 122, 150, 160;
- 33 Code of Federal Regulations part 153; and
- 40 Code of Federal Regulations parts 110, 122, 262, 265, 280, 302, 355, 761.

Oregon Agencies that may be required to be notified in the event of spill or the release of hazardous materials include:

- Oregon Emergency Management Division;
- Oregon Department of Environmental Quality; and
- Oregon Department of State Police.

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