

Request for Amendment 2 to the Shepherds Flat Central Site Certificate

**Prepared for
South Hurlburt Wind, LLC**

Prepared by



Tetra Tech, Inc.

September 2019

This page intentionally left blank

Table of Contents

1.0	Introduction and Request.....	1
1.1	Existing Site Certificate and Prior Amendments	1
1.2	Amendment Required under OAR 345-027-0050 and Review Process under OAR 345-027-0051	1
2.0	Certificate Holder Information – OAR 345-027-0060(1)(a)	3
2.1	Name of the Facility	3
2.2	Name and Mailing Address of the Certificate Holder.....	4
2.3	Current Parent Company of Certificate Holder	4
2.4	Name and Mailing Address of the Individuals Responsible for Submitting the Request.....	4
3.0	Detailed Description of the Proposed Change – OAR 345-027-0060(1)(b)	4
3.1	Effect of Proposed Changes on the Project – OAR 345-027-0060(1)(b)(A)	7
3.2	Applicable Laws and Council Rules – OAR 345-027-0060(1)(b)(B)	7
3.3	Location of the Proposed Change – OAR 345-027-0060(1)(b)(C) and Associated Analysis Areas	8
4.0	Division 21 Requirements – OAR 345-027-0060(1)(c)	8
4.1	Required Permits – OAR 345-021-0010(1)(e)	8
4.2	Additional Statutes and Rules – OAR 345-021-0010(cc).....	8
5.0	Site Certificate Revisions – OAR 345-027-0060(1)(d)	8
6.0	Division 22 Standards and Applicable Laws OAR 345-027-0060(1)(e)	9
6.1	General Standard of Review – OAR 345-022-0000	13
6.2	Organizational Expertise – OAR 345-022-0010.....	15
6.3	Structural Standard – OAR 345-022-0020.....	16
6.4	Soil Protection – OAR 345-022-0022	19
6.5	Land Use – OAR 345-022-0030.....	20
6.6	Protected Areas – OAR 345-022-0040.....	23
6.7	Retirement and Financial Assurance – OAR 345-022-0050	26
6.8	Fish and Wildlife Habitat – OAR 345-022-0060	26
6.8.1	Potential Impacts to Habitat	27
6.8.2	Potential Impacts to State-Sensitive Wildlife Species	27
6.9	Threatened and Endangered Species – OAR 345-022-0070	31
6.10	Scenic Resources – OAR 345-022-0080	32

6.11	Historical, Cultural and Archaeological Resources – OAR 345-022-0090	33
6.12	Recreation – OAR 345-022-0100	35
6.13	Public Services – OAR 345-022-0110.....	36
6.14	Waste Minimization – OAR 345-022-0120	37
6.15	Public Health and Safety Standards for Wind Energy Facilities – OAR 345-024-0010	38
6.16	Siting Standards for Wind Energy Facilities – OAR 345-024-0015	40
6.17	Noise Control Regulations – OAR 340-035-0035	41
6.18	Removal-Fill Law	45
6.19	Water Rights	45
7.0	Property Owners Located within or Adjacent to the Site of the Facility – OAR 345-027-0060(1)(f).....	45
8.0	Conclusion.....	46
9.0	References.....	46

List of Tables

Table 1.	Existing and Proposed Demo Turbine Specifications and Approved Specifications	5
Table 2.	Laws and Associated Conditions Relevant to Proposed Amendment.....	10
Table 3.	State Special-Status Species with the Potential to Occur within the Site Boundary	28
Table 4.	Summary of Studies Investigating the Effects of Turbine Size on Bird and Bat Mortality	30
Table 5.	State-Listed Species with the Potential to Occur within the Site Boundary	31
Table 6.	New Industrial and Commercial Noise Standards.....	42

List of Figures

Figure 1. Facility Location

Figure 2. Demo Turbines

Figure 3. Analysis Areas

Figure 4. O&M Work Areas

Figure 5. Nearest Noise Sensitive Receivers

Attachments

Attachment 1. Red-line Site Certificate

Attachment 2. DOGAMI Consultation Notes

Attachment 3. Foundation Analysis

Attachment 4. Seismic Data

Attachment 5. Emergency Action Plan

Attachment 6. Adjacent Property Owner Assessor's Data

Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ADR	Amendment Determination Request
ASC	Application for Site Certificate
BLM	U.S. Bureau of Land Management
Caithness	Caithness Energy, LLC
Certificate Holder	South Hurlburt Wind, LLC
Council	Oregon Energy Facility Siting Council
dBA	A-weighted decibels
Demo Turbines	Demonstration Turbines
DOGAMI	Oregon Department of Geology and Mineral Industries
FAA	Federal Aviation Administration
Facility	Shepherds Flat Central
GCZO	Gilliam County Zoning and Land Development Ordinance
MW	megawatts
NSR	noise sensitive receptors
O&M	operations and maintenance
OAR	Oregon Administrative Rules
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ORS	Oregon Revised Statutes
OWRD	Oregon Water Resources Department
RFA	Request for Amendment
RPS	Oregon's Renewable Portfolio Standard
ZVI	Zone of Visual Influence
WAGS	Washington ground squirrel
WMMP	Wildlife Monitoring and Mitigation Plan

1.0 Introduction and Request

Shepherds Flat Central (the Facility) is an operational wind energy facility with 116 turbines and a maximum generating capacity of 290 megawatts (MW), located within a Site Boundary of approximately 11,769 acres in Gilliam and Morrow counties. The Certificate Holder for the Facility is South Hurlburt Wind, LLC (Certificate Holder), a wholly owned subsidiary of Caithness Shepherds Flat, LLC (Shepherds Flat), which is in turn, an indirect a subsidiary of Caithness Energy, LLC (Caithness). The Facility is part of the Shepherds Flat Wind Farm, which also consists of Shepherds Flat North and Shepherds Flat South. The certificate holders for Shepherds Flat North and South are separate subsidiaries of Shepherds Flat.

The Certificate Holder is submitting this Request for Amendment (RFA) 2 to the Facility Site Certificate (Site Certificate) to allow two turbines (Turbines 368 and 370; see Figure 1) to be upgraded to current technology by modifying the turbine nacelles and exchanging existing blades for longer turbine blades on existing turbine towers; this will be performed during typical operations and maintenance (O&M) activities. Currently, Condition 26 of the Site Certificate maintains a minimum allowed blade tip clearance of 25 meters. The Certificate Holder proposes to decrease the minimum allowed blade tip clearance for two Demonstration Turbines (Demo Turbines) from 25 meters to 21.5 meters above the ground. The maximum generating capacity will remain the same (290 MW). The upgrade to the Demo Turbines will provide the data necessary to logistically plan for the optimization of energy output from upgraded equipment for the whole Shepherds Flat Wind Farm, which will be included in a subsequent amendment request.

1.1 Existing Site Certificate and Prior Amendments

The Certificate Holder obtained a Site Certificate for the Shepherds Flat Wind Farm from the Oregon Energy Facility Siting Council (the Council) on July 25, 2008, approving construction of the Facility. Since 2008, the Certificate Holder has obtained Council approval to divide the Shepherds Flat Wind Farm into the three facilities, each with their own site certificate. The division request was approved and issued on September 11, 2009. The Site Certificate on Amendment 1 was issued for the Facility on March 12, 2010. Amendment 1 authorized expansion of the Site Boundary to accommodate an alternative route for the transmission line to connect to the regional transmission system operated by Bonneville Power Administration. The Facility became operational in 2012.

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

The Certificate Holder submitted an amendment determination request (ADR) for a Type B review to the Oregon Department of Energy (ODOE) on May 21, 2019. The ADR was for the proposed modifications to accommodate the Demo Turbines. On June 17, 2019, ODOE responded that at that time they were unable to make a determination of whether the RFA justified review under the Type B review process. ODOE noted in its letter what additional information and analysis was needed to support ODOE's evaluation, which could be provided in a revised request. RFA 2 provides the

necessary information to determine that the Type B review process is the appropriate process for the proposed change, as further validated with the following analysis of the Oregon Administrative Rule (OAR) 345-027-0057(8) evaluation criteria:

OAR 345-027-0057(8) In determining whether a request for amendment justifies review under the type B review process described in 345-027-0051(3), the Department and the Council may consider factors including but not limited to:

OAR 345-027-0057(8)(a) The complexity of the proposed change;

The primary purpose of RFA 2 is to take advantage of technological advances in wind turbines. The Site Boundary will not be changed; therefore, there are no new areas or resources to consider that were not previously evaluated. The Certificate Holder replaces blades and gearboxes as a matter of routine Facility maintenance, and the proposed change will follow existing maintenance protocols. The Demo Units are scheduled for blade bearing replacements in the Fall of 2019, and the new blades would be added at that time. This ensures that there is no incremental impact from what is otherwise necessary to carry out existing and already scheduled maintenance. These protocols are not complex: the Facility's on-site crane will be trucked to the first Demo Turbine site, using existing Facility roads. After crane assembly, the Certificate Holder plans to remove the existing full rotor in one lift. Should wind conditions not allow for full rotor removal, blades will be removed individually. The new rotor will be assembled on the ground and lifted as a unit for installation. The crane will then crawl within the existing, approved Facility footprint for temporary and permanent impacts, to the next Demo Turbine and the process will be repeated. The crane will then be disassembled and trucked out on existing Facility roads. The Demo Turbine retrofit will take approximately 2 weeks per wind turbine.

In general, given that the proposed changes will only be to two turbines, will not increase the approved height of the turbine, and will utilize existing facilities and equipment as part of planned O&M operations, the proposed changes lack complexity. Ultimately, the Facility will continue to be operated in the same manner as previously approved by the Council.

At its February 22, 2019 meeting, the Council concurred with NextEra Energy's request that RFA 5 for the Stateline Wind Facility should be subject to the Type B review process. RFA 5 for the Stateline Wind Facility increased the turbine height and rotor diameter, and decreased the minimum aboveground blade tip clearance to allow for repowering the entire facility. Because this RFA 2 proposes only to modify one turbine specification and for only for two turbines, ODOE and the Council can similarly concur that the proposed change is not complex and should be subject to the Type B review process.

OAR 345-027-0057(8)(b) The anticipated level of public interest in the proposed change;

The Facility is not accessible to the public, the turbines are in a remote area in the middle of the Facility site, the proposed change is to only two turbines, and there will be no change to the previously approved Site Boundary (see Figure 1). There will also be no change to noise (see Section 6.17), visual impacts (see Section 6.10), or public safety (see Section 6.15). Therefore, public interest in the proposed change is anticipated to be minimal, if any. The Council has already

addressed and imposed conditions as necessary in response to past public comments during the siting process (ODOE 2008). In fact, no interested person contested the Application for Site Certificate (ASC; ODOE 2008). As noted above, the proposed change lacks complexity, and will not result in any changes to the Facility that will affect the public.

OAR 345-027-0057(8)(c) The anticipated level of interest by reviewing agencies;

Reviewing agencies commented on the original Site Certificate, which informed the development of the Site Certificate conditions. The Certificate Holder coordinated with agencies that may be interested in the changes, such as Oregon Department of Fish and Wildlife (ODFW) (see Sections 6.8 and 6.9). The Certificate Holder understands that the ODOE review process includes outreach to respective agencies as a matter of process, but it is anticipated that their interest will be low in comparison to other recent energy projects because of the limited scope of the proposed change and the fact that the modifications will occur in conjunction with routine O&M activities.

OAR 345-027-0057(8)(d) The likelihood of significant adverse impact; and

RFA 2 does not propose to increase the footprint of the Facility or the Site Boundary. RFA 2 proposes a minor turbine specification change: to lower the approved minimum aboveground blade tip clearance and increase maximum blade tip height for only two turbines. These modifications to two turbine specifications are not anticipated to change the previously authorized impacts to scenic resources, public safety, and avian species, or alter the noise profile of the facility. As demonstrated in Sections 6.8, 6.9, 6.10, and 6.13 there are no significant changes to impacts for these resources.

OAR 345-027-0057(8)(e) The type and amount of mitigation, if any.

The Facility has an ODFW-approved Wildlife Monitoring and Mitigation Plan (WMMP) and Habitat Mitigation Plan (HMP). Studies with respect to a lower blade tip clearance on avian mortality are limited; however, there will be no new significant impact (see Section 6.8). For these and the reasons described above, the Certificate Holder does not anticipate any new or changes to existing mitigation plans.

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

OAR 345-027-0060(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:

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.

2.1 Name of the Facility

Shepherds Flat Central

2.2 Name and Mailing Address of the Certificate Holder

South Hurlburt Wind, LLC
c/o Caithness Energy, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017

2.3 Current Parent Company of Certificate Holder

Caithness Energy, LLC

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

Derrel A. Grant
Senior Vice President
South Hurlburt Wind, LLC
c/o Caithness Energy, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017
(212) 921-9099
dgrant@caithnessenergy.com

3.0 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:

The Certificate Holder needs to refurbish blade bearings and associated machinery on two units as part of ongoing O&M practices. While doing so, the Certificate Holder is proposing to replace the existing turbine blades and associated machinery with longer blades and more advanced machinery so that two units can be utilized as the Demo Turbines (Figure 2) to ascertain the ability to optimize energy output with upgraded equipment. A minor Site Certificate condition adjustment is being requested to provide for the turbines with a lower blade tip clearance. Specifically, Condition 26 will be amended to lower the minimum ground clearance from 25 meters to 21.5 meters to accommodate the longer blades of the Demo Turbines (see Section 5.0).

The longer blades will increase the rotor diameter and maximum blade tip height; *however, these dimensions are within the range of turbine specifications approved for use at the Facility per the Site Certificate Condition 26 which provides turbine specifications approved for use at the Facility (see*

Section 5.0). The maximum generating capacity will remain the same (290 MW). Table 1 provides the existing specifications and proposed specifications for the Demo Turbines and the specifications in the Site Certificate (Condition 26).

Table 1. Existing and Proposed Demo Turbine Specifications and Approved Specifications

Specification	Existing Turbine Specifications	Proposed Turbine Specifications	Approved per Condition 26 of Site Certificate
Hub Height in feet (meters)	85	85	105
Maximum blade tip height (meters)	135	150	150
Minimum Ground Clearance in feet (meters)	25	21.5	25

The upgrade will allow each Demo Turbine to generate more electricity with no increase in permanent footprint. It will also hone the equipment exchange process in advance of a comprehensive Facility update (to be requested in a subsequent amendment request) so that it can be completed as efficiently as possible, minimizing disturbances to the site. Once upgraded, the Demo Turbines will also provide the calibration data for the comprehensive Facility upgrade.

Upgrading the Demo Turbines will be completed during the same activities and processes for the blade bearing replacement. These activities are typical and routine to wind farm O&M activities, which include routinely switching out blades and other turbine components in order to maintain the turbines in good and safe working order.

Specific details of the upgrading of the Demo Turbines includes:

- Replace the current 100-meter rotor diameter blades with larger 127-meter rotor diameter blades.
- Replace the hub casting as part of the rotor upgrade.
- Modify the roof of the nacelle to accommodate the replacement of the wind turbine drive train.
- Install a new gearbox and bedplate.
- Replace various electrical and controller components in the turbines to support the upgrades.

There will be no changes to the current tower or foundation, the current generator or its configuration, the current electrical infrastructure at the turbine, the Facility electrical collection system, or any other related or supporting facilities. The upgrades to the Demo Turbines will take approximately 2 weeks per wind turbine. As noted above, the Demo Units are scheduled for blade bearing replacements in the Fall of 2019, and the new blades would be added at that time. This

ensures that there is no incremental impact from what is otherwise necessary to carry out existing and already scheduled maintenance.

The scheduled maintenance to the Demo Turbines will utilize existing Facility infrastructure, access roads, and turbine pad areas, as is typical of O&M work. As with other routine O&M activities, there will be some superficial ground disturbance; i.e., no grading or earthwork will occur, but there will be some vegetation disturbance. Vegetation disturbance will be reduced by preserving vegetation rootstalks through crushing, by driving over vegetation, or placing replacement components on the ground surface, rather than scraping vegetation to bare ground in the work areas (Condition 76). The area of vegetation disturbance will be within the area disturbed for Facility construction, but not to the full extent of that area.

The superficial ground disturbance associated with the Demo Turbines' upgrade operations will include a variety of activities. Equipment will be delivered in standard protective frames and stands. This equipment will be delivered on semi-trucks to each Demo Turbine pad using existing Facility roads. Components will be placed primarily on road and pad surfaces; however, placement of the equipment may exceed the dimensions of the pad, as regularly occurs during temporary equipment laydowns at the Facility. The Facility's regularly-used, on-site crane will be trucked to the first Demo Turbine using existing Facility roads. At Turbine 370, the sharp, 90-degree turn may require trucks to drive briefly across a revegetated area. A turnaround area in vegetation north of Turbine 368 will also be used by the semi-trucks.

After crane assembly at the first Demo Turbine, the existing rotor will be removed in one lift. Should wind conditions not allow for full rotor removal, blades will be removed individually. As turbine parts are removed, they will be trucked out on semi-trucks along existing roads. The crane will then crawl slowly to the second Demo Turbine. During this crane walk, one track will remain on the Facility road, and one track will be in motion along the side of the road. The on-site crane is 33.5 feet wide. Each crane track is 5 feet wide. Facility roads are 16 feet wide. Therefore, a single crane track will crawl in an area offset from the road by 12.5 feet. This area is the maximum width of vegetation disturbance anticipated along this turbine road (Figure 4).

The turbine disassembly process will be repeated at the second Demo Turbine, followed by the assembly process. The new rotor will be assembled on the ground and lifted as a unit. The crane will then walk slowly back to the first Demo Turbine, using the same path along the turbine road with one, 5-foot track to the side of the road. The assembly process will occur at the first Demo Turbine. The crane will then be disassembled and trucked out on existing Facility roads.

Such superficial ground disturbance around turbine roads and pads from the activities described above occurs regularly, and existing turbine parts (e.g., blade bearings, 100-meter rotor diameter blades, hub castings, nacelle bodies, gearboxes, electrical and controller components) are maintained and replaced at the Facility, as approved under the existing Site Certificate. The same permitted operations used to maintain and repair existing equipment will occur to upgrade the Demo Turbines with 127-meter rotor diameter blades, new hub castings, modified nacelle roofs, new gearboxes and bedplates, and electrical and controller components inside the turbines. Areas

of temporary vegetation disturbance from Facility operations, maintenance, and repair are routinely revegetated in compliance with Condition 77:

During facility operation, the Certificate Holder shall routinely inspect and maintain all roads, pads and trenched areas and, as necessary, maintain or repair erosion and sediment control measures. The Certificate Holder shall restore areas that are temporarily disturbed during facility maintenance or repair activities to pre-disturbance condition or better.

3.1 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

As noted above, replacing blades and associated mechanical equipment is typical to industry activities as part of O&M procedures. The proposed change to the two Demo Turbines would not change how the Facility is operated, as previously approved by the Council. There would be no new structures or permanent ground development, only the upgrading of two existing turbines. There also would be no change to the previously approved Site Boundary. As noted above, once upgraded, the Demo Turbines will provide the calibration data for the comprehensive Facility upgrade. The comprehensive upgrade would extend the useful life of the Facility by approximately 20 years (the Facility began operation in 2012 and was originally expected to have a 30-year useful life). More importantly, once upgraded, the Facility will have a 20-30 percent increase in performance, predominately in lower wind speeds. Ultimately, the proposed change would maximize the use of current technology, while supporting renewable energy production in the region.

3.2 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

There have been no changes to local, state, or federal law that would prohibit the changes requested in this RFA 2. Compliance with applicable laws is integrated into the Site Certificate conditions, which have been complied with for all stages of the Facility development so far (i.e., pre-construction, construction, operations), as documented through the annual condition compliance report. Although minor modifications to the Site Certificate are being requested to provide for two turbines with a lower blade tip clearance, RFA 2 can still comply with the purpose or intent of all Site Certificate conditions.

In general, the proposed changes do not affect the resources or interests protected by applicable laws and Council standards in a substantially different way than previously approved by the Council. The Facility is operational, and the Site Boundary or footprint of the Facility would not be changed; therefore, there are no new areas that would need to be considered that were not previously evaluated. Other than the change in turbine dimension (specific to the two Demo Turbines) the Facility would be operated in the same manner as already approved by the Council and as documented through annual reporting that has been completed since the Facility was first operational in 2012. Sections 4.0 and 6.0 demonstrate how the proposed changes are consistent with the Council's previous findings.

3.3 Location of the Proposed Change – OAR 345-027-0060(1)(b)(C) and Associated Analysis Areas

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

Figure 1 shows the Facility location, and Figure 2 shows the location of the two Demo Turbines. The two Demo Turbines (Turbines 368 and 370) are within tax lot Section 15, 2N-22-1400. No turbine relocations are proposed, and all existing as-built maps remain in effect. There would be no new permanent impact areas as part of RFA 2 or new areas of temporary impacts, only temporary impacts associated with typical O&M typical activities within the previously approved temporary impact areas.

Per an email from Christopher Clark of ODOE on July 16, 2019:

For the purposes of preparing the proposed request, ODOE approves limiting the analysis area to the two affected units and the area within the distances specified under OAR 345-001-0010(59) from the two affected units as allowed under OAR 345-027-0060(3).

Therefore, Figure 3 provides the analysis areas reviewed in RFA 2 in consideration of ODOE direction and OAR 345-001-0010(59).

4.0 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.

4.1 Required Permits – OAR 345-021-0010(1)(e)

The Final Order on the ASC and subsequent amendment identified the federal, state, and local government permits related to the siting of the Facility, which were incorporated into Site Certificate conditions as necessary. Because the Facility is operational, and the proposed change will be implemented as part of routine O&M activities, only the Federal Aviation Administration (FAA) permit (Condition 57) is applicable to RFA 2.

4.2 Additional Statutes and Rules – OAR 345-021-0010(cc)

There are no additional statutes and rules that are applicable to the two Demo Turbines.

5.0 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.

The Certificate Holder proposes to modify the specific language of Site Certificate Condition 26 as shown below and in Attachment 1. No other language in the site certificate is proposed to be changed as part of RFA 2.

26. The Certificate Holder shall construct a Facility substantially as described in the Site Certificate and may select turbines of any type, subject to the following restrictions and compliance with all other Site Certificate conditions. Before beginning construction, the Certificate Holder shall provide to ODOE a description of the turbine types selected for the Facility demonstrating compliance with this condition.

- a. The total number of turbines at the Facility must not exceed 116 turbines.*
- b. The combined peak generating capacity of the Facility must not exceed 290 megawatts.*
- c. The turbine hub height must not exceed 105 meters and the maximum blade tip height must not exceed 150 meters.*
- d. The minimum blade tip clearance must be 25 meters above ground, with the exception of turbine number 368 and turbine number 370 for which the minimum blade tip clearance must be 21.5 meters above ground.*
- e. The maximum volume of concrete above three feet below grade in the turbine foundations must not exceed 66 cubic yards.*
- f. The maximum combined weight of metals in the tower (including ladders and platforms) and nacelle must not exceed 393 U.S. tons per turbine.*
- g. The Certificate Holder shall request an amendment of the Site Certificate to increase the combined peak generating capacity of the Facility beyond 290 megawatts, to increase the number of wind turbines to more than 116 wind turbines or to install wind turbines with a hub height greater than 105 meters, a blade tip height greater than 150 meters or a blade tip clearance less than 25meters above ground.*
- h. The Certificate Holder shall exchange blades and associated mechanical equipment for turbines 368 and 370 during operation of the Facility; in conjunction with routine operations and maintenance activities.*

6.0 Division 22 Standards and Applicable Laws 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).

Council standards relevant to RFA 2 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 power generating facilities. Similarly, inapplicable provisions of Division 24 (e.g., standards applicable to gas plants, gas storage, non-generating facilities) are not discussed in RFA 2. The upgrades to the Demo Turbines and the operational Facility do not alter the Certificate Holder's ability to comply with the Council's earlier findings in the Final Order on the ASC and Amendment 1.

The primary purpose of RFA 2 is to take advantage of technological advances in the efficiency of wind resource harvesting, as part of typical O&M activities for the Facility. The Site Boundary would not be changed and there would be no changes to the Facility's approved permanent and temporary impact footprint. Table 2 identifies Council standards and other laws that were reviewed as part of RFA 2, and their applicability to the proposed change. Table 2 also identifies the conditions applicable to the operational phase of the Facility. Ultimately, the Facility would be operated in the same manner as previously approved by the Council, which imposed conditions, as necessary, for Facility operations. Except as specifically proposed in Section 5.0 of this RFA, the Certificate Holder will continue to comply with all existing Site Certificate conditions, as documented through annual reporting.

Table 2. Laws and Associated Conditions Relevant to Proposed Amendment

Standard	Applicability	Conditions Applicable to RFA 2
OAR 345-022-0000 General Standard of Review	Applicable and complies.	(3) Design, construct and operation Facility in compliance with Site Certificate, Council rules and other permits.
OAR 345-022-0010 Organizational Expertise	Applicable and complies. There is no proposed change to the Certificate Holder who has been operating the Facility for 7 years in accordance with applicable Site Certificate conditions. See Section 6.2 for accompanying analysis.	N/A
OAR 345-022-0020 Structural Standard	Applicable and complies. See Section 6.3 which includes updated information regarding engineering studies and climate change.	(62) Inspect turbine and turbine tower components on a regular basis; maintain and repair as necessary.

**REQUEST FOR AMENDMENT 2 TO
THE SHEPHERDS FLAT CENTRAL SITE CERTIFICATE**

Standard	Applicability	Conditions Applicable to RFA 2
OAR 345-022-0022 Soil Protection	Applicable and complies. There would be no change to the Facility footprint and no permanent surface disturbance. The proposed changes do not modify the basis for the Council's previous findings for soil protection.	(50) Handling of hazardous materials (51) Hazardous material spill cleanup (77) Restore temporarily disturbed areas
OAR 345-022-0030 Land Use	Applicable and complies. There would be no change to the Facility footprint and all setbacks would still be met, therefore the proposed changes would not impact farm or ranch use in the area.	(36) Landowner consultation (37) Minimize land disturbance (38) Noxious weed control plan (40) Setback requirements (84) Revegetation plan
OAR 345-022-0040 Protected Areas	Applicable and complies. The proposed change does not modify the basis for the Council's previous finding for protected areas.	N/A
OAR 345-022-0050 Retirement and Financial Assurance	Applicable and complies. With the proposed change, 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.	(7) Prevent development on site that would preclude restoration. (8) Maintain a bond or letter of credit until facility retirement. (30) Adjust the amount of bond or letter of credit on an annual basis.
OAR 345-022-0060 Fish and Wildlife Habitat	Applicable and complies. Proposed change would be within existing Site Boundary in areas surveyed for fish and wildlife habitat.	(77) Restore temporarily disturbed areas (83) Wildlife Monitoring and Mitigation Plan (84) Revegetation Plan (85) Habitat Mitigation Plan within habitat mitigation area (89) May not remove any trees greater than three feet in height (92) Five mile per hour speed limit within 1000 feet of WAGS habitat; 20 mile per hour speed limit on Facility roads

**REQUEST FOR AMENDMENT 2 TO
THE SHEPHERDS FLAT CENTRAL SITE CERTIFICATE**

Standard	Applicability	Conditions Applicable to RFA 2
OAR 345-022-0070 Threatened and Endangered Species	Applicable and complies. The Facility would be constructed within the approved Site Boundary where impacts to T&E species have already been reviewed.	(83) Wildlife Monitoring and Mitigation Plan (92) Five mile per hour speed limit within 1000 feet of WAGS habitat; 20 mile per hour speed limit on Facility roads
OAR 345-022-0080 Scenic Resources	Applicable and complies. The proposed change does not modify the basis for the Council's previous finding for Scenic Areas.	(93) Visual impact minimization (95) Exterior nighttime lighting
OAR 345-022-0090 Historic, Cultural and Archaeological Resources	Applicable and complies. Identified resources would be protected per applicable conditions.	(43) Final design map (45) Work cease due to historical find (46) Oregon Trail buffers
OAR 345-022-0100 Recreation	Applicable and complies. The proposed change does not modify the basis for the Council's previous finding for recreation areas.	N/A
OAR 345-022-0110 Public Services	Applicable and complies. Existing conditions apply to the Facility, which would be complied with for this RFA.	(27) Required permits (53) Annual fire training (54) Fire prevention equipment (55) Fire safety plans (56) Site plan to fire protection agencies (69) Site health and safety plan (70) Onsite security and communication with law enforcement (78) Operation onsite water compliance (100) Operation sanitary wastewater compliance
OAR 345-022-0120 Waste Minimization	Applicable and complies. The proposed change is not anticipated to increase the amount of solid waste and wastewater generated by the Facility.	(50) Handling of hazardous materials (51) Hazardous material spill cleanup (100) Discharge of sanitary wastewater (102) Operation waste management plan requirements

Standard	Applicability	Conditions Applicable to RFA 2
OAR 345-024-0010 Public Health and Safety Standards for Wind Energy Facilities	Applicable and complies. The proposed turbine modifications would result in a lower maximum blade tip height and a higher minimum blade tip clearance than other facilities currently approved by the Council. No new conditions are proposed for operations and upgrading.	(53) Annual fire training (54) Fire prevention equipment (55) Fire safety plans (56) Site plan to fire protection agencies (57) FAA Notice of Proposed Alteration (58) Maintenance of turbine pads (59) Manufactures' handling procedures (60) Maintenance of self-monitoring devices (61) Locked turbine access doors (62) Operational safety-monitoring program (64) Enclosure and locking of substation (71) Notification of accidents and mechanical failures (81) Transmission line maintenance (93) Visual impact minimization (95) Exterior nighttime lighting
OAR 345-024-0015 Siting Standards for Wind Energy Facilities	Applicable and complies. The Facility is operational with existing infrastructure. The proposed changes are being designed in consideration of cumulative adverse environmental effects.	(58) Maintenance of turbine pads (86) Disturbance avoidance areas (93) Visual impact minimization (95) Exterior nighttime lighting
OAR 345-024-0090 Transmission Lines	Not Applicable. There would be no changes to the transmission line as part of this ADR.	N/A
OAR 340-035-0035 Noise	Applicable and complies.	(96) Construction equipment noise (97) Noise compliance (98) Noise complaint response system
Removal-Fill Law	Applicable and complies.	N/A
Water Rights	Applicable and complies.	(78) Operation water usage

6.1 General Standard of Review – OAR 345-022-0000

(1) To issue a site certificate for a proposed facility or to amend a site certificate, the Council shall determine that the preponderance of evidence on the record supports the following conclusions:

(a) The facility complies with the requirements of the Oregon Energy Facility Siting statutes, ORS 469.300 to 469.570 and 469.590 to 469.619, and the standards adopted by the Council pursuant to 469.501 or the overall public benefits of the facility outweigh any adverse effects

on a resource or interest protected by the applicable standards the facility does not meet as described in section (2);

(b) Except as provided in OAR 345-022-0030 for land use compliance and except for those statutes and rules for which the decision on compliance has been delegated by the federal government to a state agency other than the Council, the facility complies with all other Oregon statutes and administrative rules identified in the project order, as amended, as applicable to the issuance of a site certificate for the proposed facility. If the Council finds that applicable Oregon statutes and rules, other than those involving federally delegated programs, would impose conflicting requirements, the Council shall resolve the conflict consistent with the public interest. In resolving the conflict, the Council cannot waive any applicable state statute.

....

(4) In making determinations regarding compliance with statutes, rules and ordinances normally administered by other agencies or compliance with requirements of the Council statutes if other agencies have special expertise, the Department of Energy shall consult with such other agencies during the notice of intent, site certificate application and site certificate amendment processes. Nothing in these rules is intended to interfere with the state's implementation of programs delegated to it by the federal government.

The Council previously found that the Facility complies with the General Standard of Review (ODOE 2008, ODOE 2010). For RFA 2, the requirements of OAR 345-022-0000 are addressed in the findings, analysis, and conclusions discussed in the following sections. As detailed in the following sections, RFA 2 meets all applicable standards and the Council can continue to find that the requirements of OAR 345-022-0000 are met.

Oregon's Renewable Portfolio Standard (RPS) establishes a requirement for how much of Oregon's electricity must come from renewable resources like solar. The current RPS is set at 50 percent by 2040. In addition to Oregon's RPS, private companies have their own renewable energy procurement policies, which increase the demand for renewable energy in Oregon. These public and private policies are intended to reduce greenhouse gas emissions, mitigate climate impact, and reduce reliance on carbon-based fuels. Wind generation and wind repowering projects like this upgrade to the Facility provide for future optimized, consistent energy output to help further these policies. In addition, a mission of Oregon's Climate Action Plan is to achieve a reduction in greenhouse gas emissions levels to at least 45 percent below 1990 emissions levels by 2035, and at least 80 percent below 1990 emissions levels by 2050. The Facility upgrade will contribute to the reduction of greenhouse gas emissions.

Caithness maintains a strong presence in the local community and thereby provides a positive economic impact and public benefit. For the entire Shepherds Flat Wind Farm, there are over 50 direct jobs on site, with over 30 personnel living in-state. The Shepherds Flat Wind Farm provides approximately \$40 million of capital annually to the local community, between lease payments to landowners and property taxes. In addition, Caithness maintains a strong alliance with Columbia

Gorge Community College, provides donations to local events and charities, and are active partners to local fire and police personnel. On balance, the Council may find that proposed change in RFA 2 promotes Oregon energy policy and provides a net public benefit, and may conclude that the Facility, as modified by RFA2, continues to comply with the general standard.

6.2 Organizational Expertise – OAR 345-022-0010

(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.

The Council previously found that the Certificate Holder, as a subsidiary of Caithness, has the organizational expertise to construct, operate and retire the proposed Facility in compliance with Council standards and conditions of the Site Certificate (ODOE 2008, ODOE 2009, ODOE 2010). This finding was based on a review of qualifications of Caithness personnel who would be responsible for the construction and operation of the Facility. There has been no change to Caithness's ownership, management, or holdings that would alter the previous conclusion.

Caithness has engaged in the permitting, design and construction of energy facilities throughout the United States, including Shepherds Flat Wind Farm, and has specialized in power plant development, operations, and asset management. Caithness' efforts have resulted in a portfolio of some of the premier energy projects in the United States, making Caithness one of the largest privately held independent power producers. Shepherds Flat and its wind energy subsidiaries have not received any regulatory citations in the course of constructing and operating their respective wind energy facilities.

Caithness has been collaborating with GE Renewables for this potential upgrade of turbine hardware. GE Renewables has completed over 2,500 repowering upgrades, covering 4 gigawatts of capacity at 36 different wind farms across the United States since 2017, and has a global installed base of over 60 gigawatts. GE Renewables anticipates repowering an additional 3 gigawatts of units for 11 customers at over 25 new wind farms by the end of 2020. On average, wind turbines repowered by GE Renewables have seen a 20 percent increase in annual energy production and 1.5 percent availability improvement from pre-repower performance. GE Renewables has the engineering, design, and financing expertise to enable developers to generate the maximum amount of clean, renewable energy in the most economic manner possible.

Third-party permits will not be required, since no new construction will be required for the Demo Turbine upgrades. There are no circumstances that would alter the basis for the Council's earlier findings. Therefore, Council may rely on its previous findings that the Certificate Holder continues to have the organizational expertise to construct, operate, and retire the Facility in compliance with Council standards and Site Certificate conditions.

6.3 Structural Standard – OAR 345-022-0020

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that:

(a) The applicant, through appropriate site-specific study, has adequately characterized the seismic hazard risk of the site; and

(b) The applicant can design, engineer, and construct the facility to avoid dangers to human safety and the environment presented by seismic hazards affecting the site, as identified in subsection (1)(a);

(c) The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and

(d) The applicant can design, engineer and construct the facility to avoid dangers to human safety and the environment presented by the hazards identified in subsection (c).

(2) The Council may not impose the Structural Standard in section (1) to approve or deny an application for an energy facility that would produce power from wind, solar or geothermal

energy. However, the Council may, to the extent it determines appropriate, apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

(3) The Council may not impose the Structural Standard in section (1) to deny an application for a special criteria facility under OAR 345-015-0310. However, the Council may, to the extent it determines appropriate, apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

The Council previously found that the Certificate Holder has met the Structural Standard through compliance with Council standards and conditions of the Site Certificate (ODOE 2008, ODOE 2009). Prior to construction of the Facility, the Certificate Holder adequately characterized the seismic hazard risk of the site through an appropriate site-specific study (Site Certificate Condition 47), and designed, engineered, and constructed the Facility in accordance with the requirements set forth by the State of Oregon's Building Code Division, as well as all other applicable codes and design procedures, to meet or exceed the minimum standards required by the 2003 International Building Code (Site Certificate Condition 48). In addition, the Certificate Holder met Site Certificate Condition 49 by designing, engineering, and constructing the Facility to avoid dangers to human safety presented by non-seismic hazards. Temporary disturbance will be entirely in areas that were previously temporarily and permanently disturbed as part of Facility construction, and which were studied in the previous site-specific geotechnical investigations.

Consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI) was initiated through ODOE and conducted on August 20, 2019. The draft DOGAMI consultation notes are included as Attachment 2. During consultation, DOGAMI requested information on how seismic ground motions that exceed the building code response spectrum will be addressed and requested disaster resilience and future climate change be addressed.

The Certificate Holder conducted a foundation uprate analysis on turbines 368 and 370 to review the original foundation calculations with the new loading documents to verify whether the existing turbine foundations can support the newly proposed loading. The evaluation was conducted by a qualified engineer using current code requirements and state-of-practice methods and is included as Attachment 3. The analysis was performed for approximately 8 years of existing operational service for the longer turbine blades, plus 20 years of additional operation time after the uprated turbines are put into service. The loads were used to perform all of the design checks according to current industry standards using the existing foundation design.

Seismic consideration was based Site Class D as determined in the geotechnical report conducted for the Shepherds Flat Central Phase (Renewable Resources Consultants LLC, 2009) and on the current 2014 Oregon Structural Specialty Code, which relies on ASCE 7-10. The seismic ground acceleration factors (S_s and S_1) for the Facility are 0.435 and 0.173, respectively (see Attachment 4). During consultation with DOGAMI, it was requested that seismic ground motions that exceed the building code response spectrum are addressed. Subsequently, an analysis was conducted to look at seismic parameters for ASCE 7-16 using coordinates for turbines T-368 and T-370. The ASCE 7-16 analysis shows S_s and S_1 are 0.412 and 0.167, respectively, which is a slight decrease from ASCE 7-10 (see Attachment 4).

Although highly unlikely given the lack of recent activity, potential sources of long-period ground motions could include a significant event at or near recent faults associated with the Arlington-Shulter Butte faults and Columbia Hills structure as identified in the 2007 Seismic Hazard Assessment conducted as part of the original site certificate application (Shannon & Wilson, Inc. 2007). Given adequate seismic design as described above, potential impacts of long-period ground motions on very tall structures proposed with the facility are not expected.

In late August or early September 2019, the Certificate Holder will conduct an additional inspection of the foundations of turbines 368 and 370 by pulling back some soil and gravel in the area around both turbines to do a visual inspection; this will be within the permanent impact area of the turbine and completed during regular O&M activities. The results of these visual inspections of turbines 368 and 370 will be included in a report to be submitted to ODOE and DOGAMI by September 30, 2019. In addition, the Certificate Holder will continue to inspect all turbine and turbine tower components on a regular basis and maintain or repair turbine and turbine tower components as necessary in compliance with Site Certificate Condition 62. The regular inspections include a 10 percent check of each set of bolts on each turbine foundation, as well as a visual inspection of the outside of the foundation for damage and cracks.

The information requested for an ASC to address the Structural Standard has been revised since the time the Site Certificate was issued (OAR 345-021-0010(h)). Although the OAR-345-022-0020 standard itself has not been substantively modified, the Certificate Holder provides information below to address two new areas of concern requested for Exhibit H of new applications: disaster resilience and climate change impacts.

The Facility has been in operation for 7 years. During that time, climate change has not impacted the Facility. Future climate conditions, which may include greater-intensity rainfall events, fluctuations in typical annual snowpack (above or below normal), and warmer average annual temperatures, are also not anticipated to have a major impact on the geologic, geotechnical, and seismic conditions at the Facility. Sea level rise will not affect the Facility due to its location. The Facility's design accounts for future climate extremes during its projected lifespan. To provide disaster resiliency, the Certificate Holder has designed the repower to current code and taken into consideration seismic ground motions that exceed the building code response spectrum.

The Certificate Holder contracts with GE Renewables to perform O&M at the Facility. GE maintains an Emergency Preparedness and Fire Prevention Plan (see Attachment 5) for the Facility that is updated annually. The plan outlines the procedures to effectively respond to lightening and high winds, icing on blades or external equipment, cold weather work, and EMS coordination including on-site safety requirements and communication protocols. In addition, GE maintains instructions on how to respond to a significant event in an internal technical document titled Access and Evaluation of WTG after a Significant Event (Blade Collapse, Turbine Over Speed, Tower Damage). See Section 6.1 above for additional discussion on how the facility may help minimize the impacts of climate change. While it is hard to predict all future climatic conditions, current codes and design specifications are continuously evolving and go through annual technical reviews to ensure they are current to the latest technology and means and methods for renewable energy facilities.

Based on this updated information and analysis, the Council may conclude that the Facility, as modified by RFA2, continues to comply with the Structural Standard.

6.4 Soil Protection – OAR 345-022-0022

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 a significant adverse impact to soils including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.

The Council previously found that 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 (ODOE 2008, ODOE 2009, ODOE 2010). Exhibit I identified the soil conditions and land uses in accordance with the submittal requirements in ORA 345-021-0010 (1)(I) paragraphs (A) through (E). All work conducted at the site during construction followed requirements of the Erosion and Sediment Control Plan and the National Pollutant Discharge Elimination System 1200-C permit as required by Site Certificate Condition 73.

Upgrading the two Demo Turbines will cause temporary disturbance entirely in areas that were previously temporarily and permanently disturbed as part of Facility construction. Temporary disturbance will occur along the roads where the crane will move turbine components. Once the crane is removed from the site, the temporary, superficial disturbance will be revegetated in according to Condition 77, as is routinely done as part of O&M activities. As described above in Section 6.3, the Certificate Holder will pull soil and gravel away from turbines 368 and 370 for a visual inspection of the turbine foundations. This temporary disturbance will occur in the permanently disturbed areas around the turbine foundations and will not be revegetated, but put back to its pre-existing state.

During the Demo Turbine upgrade, potentially hazardous materials that could be used include lubricating oils. As with other O&M activities that are conducted at the Facility, the Certificate Holder will continue to follow Site Certificate Condition 50 to handle hazardous materials present on site in a manner that protects public health, safety, and the environment, and comply with all applicable environmental laws and regulations. Site Certificate Condition 51 will continue to be followed if an accidental spill or release were to occur, and spill kits will continue to be kept on site.

The proposed changes in this RFA do not affect the basis for the Council's previous findings of compliance with the Soil Protection Standard because the upgrade to the Demo Turbines will occur to two existing turbines within the previously approved and disturbed (during construction) Facility footprint. The Facility must still comply with the Soil Protection Conditions previously imposed on the Facility (as discussed above) as they relate to operation. The Facility is already constructed, and the Certificate Holder has met all pre-construction and construction conditions, and continues to meet operational conditions as documented in annual reporting. Therefore, the Council may conclude that the Facility, as modified by RFA 2, continues to comply with the Soil Protection Standard.

6.5 Land Use – OAR 345-022-0030

(1) To issue a site certificate, the Council must find that the proposed facility complies with the statewide planning goals adopted by the Land Conservation and Development Commission.

(2) The Council shall find that a proposed facility complies with section (1) if:

(a) The applicant elects to obtain local land use approvals under ORS 469.504(1)(a) and the Council finds that the facility has received local land use approval under the acknowledged comprehensive plan and land use regulations of the affected local government; or

(b) The applicant elects to obtain a Council determination under ORS 469.504(1)(b) and the Council determines that:

(A) The proposed facility complies with applicable substantive criteria as described in section (3) and the facility complies with any Land Conservation and Development Commission administrative rules and goals and any land use statutes directly applicable to the facility under ORS 197.646(3);

(B) For a proposed facility that does not comply with one or more of the applicable substantive criteria as described in section (3), the facility otherwise complies with the statewide planning goals or an exception to any applicable statewide planning goal is justified under section (4); or

(C) For a proposed facility that the Council decides, under sections (3) or (6), to evaluate against the statewide planning goals, the proposed facility complies with the applicable statewide planning goals or that an exception to any applicable statewide planning goal is justified under section (4).

(3) As used in this rule, the "applicable substantive criteria" are criteria from the affected local government's acknowledged comprehensive plan and land use ordinances that are required by the statewide planning goals and that are in effect on the date the applicant submits the application. If the special advisory group recommends applicable substantive criteria, as described under OAR 345-021-0050, the Council shall apply them. If the special advisory group does not recommend applicable substantive criteria, the Council shall decide either to make its own determination of the applicable substantive criteria and apply them or to evaluate the proposed facility against the statewide planning goals.

(4) The Council may find goal compliance for a proposed facility that does not otherwise comply with one or more statewide planning goals by taking an exception to the applicable goal. Notwithstanding the requirements of ORS 197.732, the statewide planning goal pertaining to the exception process or any rules of the Land Conservation and Development Commission pertaining to the exception process, the Council may take an exception to a goal if the Council finds:

(a) The land subject to the exception is physically developed to the extent that the land is no longer available for uses allowed by the applicable goal;

(b) The land subject to the exception is irrevocably committed as described by the rules of the Land Conservation and Development Commission to uses not allowed by the applicable goal because existing adjacent uses and other relevant factors make uses allowed by the applicable goal impracticable; or

(c) The following standards are met:

(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

(B) The significant environmental, economic, social and energy consequences anticipated as a result of the proposed facility have been identified and adverse impacts will be mitigated in accordance with rules of the Council applicable to the siting of the proposed facility; and

(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.

(5) If the Council finds that applicable substantive local criteria and applicable statutes and state administrative rules would impose conflicting requirements, the Council shall resolve the conflict consistent with the public interest. In resolving the conflict, the Council cannot waive any applicable state statute.

(6) If the special advisory group recommends applicable substantive criteria for an energy facility described in ORS 469.300(11)(a)(C) to (E) or for a related or supporting facility that does not pass through more than one local government jurisdiction or more than three zones in any one jurisdiction, the Council shall apply the criteria recommended by the special advisory group. If the special advisory group recommends applicable substantive criteria for an energy facility described in ORS 469.300(11)(a)(C) to (E) or a related or supporting facility that passes through more than one jurisdiction or more than three zones in any one jurisdiction, the Council shall review the recommended criteria and decide whether to evaluate the proposed facility against the applicable substantive criteria recommended by the special advisory group, against the statewide planning goals or against a combination of the applicable substantive criteria and statewide planning goals. In making the decision, the Council shall consult with the special advisory group, and shall consider:

(a) The number of jurisdictions and zones in question;

(b) The degree to which the applicable substantive criteria reflect local government consideration of energy facilities in the planning process; and

(c) The level of consistence of the applicable substantive criteria from the various zones and jurisdictions.

The Council previously concluded that the Facility complied with the Land Use Standard (ODOE 2008, ODOE 2009, ODOE 2010). Under OAR 345-021-0010(1)(k), an applicant must elect to address the Council's Land Use standard by obtaining local land use approvals under Oregon Revised Statutes (ORS) 469.504(1)(a), or by obtaining a Council determination under ORS 469.504(1)(b).

The Certificate Holder elected to have the Council make the land use determination for the Facility under ORS 469.504(1)(b) and OAR 345-022-0030(2)(b).

RFA 2 does not affect the Council's previous findings of compliance with the Land Use Standard, because the upgrades will occur to two existing turbines within the previously approved and disturbed (during construction) Facility footprint. The Facility must still comply with Land Use conditions previously imposed on the Facility as they relate to operation (see Table 2; Conditions 36, 37, 38, and 84). The Facility is operational and the Certificate Holder met all pre-construction and construction conditions. The Certificate Holder continues to meet operational conditions, as documented through annual reporting.

The Council found that the Facility, as amended through RFA 1, complies with the applicable substantive criteria from the Gilliam County Zoning and Land Development Ordinance (GCZO) and land use regulations. Compliance with the GCZO and county land use regulations is required by the statewide planning goals in effect on the date the application is submitted. The Facility also must comply with any Land Conservation and Development Commission administrative rules and goals, as well as any land use statutes directly applicable to the Facility. As stated in Section 1, RFA 2 involves only the aspects of the Facility located within the previously disturbed construction area at two existing turbines; it does not include any other facilities including the transmission line. Therefore, the Certificate Holder addresses the Land Use Standard accordingly, and does not review the transmission line or features other than those identified in Section 1.

In its evaluation of the Facility under the Land Use Standard (OAR 345-022-0030) in the ASC, and in the subsequent request for amendment, the Council considered the applicable, substantive criteria. Specifically, pertinent to RFA 2 which includes only proposed changes in Gilliam County, this includes the GCZO (adopted 1947 and amended through 2000; codified in 2005 and amended through 2017). The GCZO has not had changes to the applicable sections that would impact the Council's prior findings under the Land Use Standard. The changes to these documents either do not apply to the location or zoning of the Facility site, or to the land use classification of the Facility or the Facility improvements.¹

As stated in Article 7, Section 7.020(T)(7)(c)(2) of the GCZO, an amendment to the conditional use permit shall be required if the proposed Facility changes would:

- (a) Increase the land area taken out of agricultural production by an additional 20 acres or more;*
- (b) Increase the land area taken out of agricultural production sufficiently to trigger taking a Goal 3 exception;*
- (c) Require an expansion of the established Facility boundaries;*

¹ GCZO Amendments since RFA 1:

- Ordinance No. 2011-04; Effective Date November 2, 2011 – Amends the Comprehensive Plan and GCZLDO, which included a zone change from Exclusive Farm Use to Limited Industrial.
- Ordinance No. 2017-02; Effective Date May 3, 2017 – Adopts marijuana business regulations, pursuant to Oregon House Bill 3400.

(d) Increase the number of towers;

(e) Increase generator output by more than 25 percent relative to the generation capacity authorized by the initial permit due to the repowering or upgrading of power generation capacity.

Under RFA 2, the Facility will not require an amendment to its Conditional Use Permit. This request does not seek to enlarge the existing Site Boundary, and there is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations of the Facility. The two Demo Turbines, once upgraded, will comply with all previous setback standards imposed through GCZO Sections 7.020, 4.020, and 7.010, as well as Site Certificate Condition 40 (Beseda 2019). The upgrading of the two Demo Turbines will occur at two existing turbines and will only impact land previously disturbed by construction of the Facility, and which is typically used for Facility O&M activities. Therefore, RFA 2 makes no changes that would alter the basis for Council's earlier findings.

As described herein, the changes proposed in RFA 2 comply with all applicable substantive criteria. Therefore, the Council can find that the Facility complies with the statewide planning goals adopted by the Land Conservation and Development Commission. For the reasons discussed above, the Council can find that, with approval of RFA 2, the Facility continues to comply with the Land Use Standard.

6.6 Protected Areas – OAR 345-022-0040

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:*
 - Coastal Oregon Marine Experiment Station, Astoria.*
 - Mid-Columbia Agriculture Research and Extension Center, Hood River.*
 - Agriculture Research and Extension Center, Hermiston.*
 - Columbia Basin Agriculture Research Center, Pendleton.*
 - Columbia Basin Agriculture Research Center, Moro.*
 - North Willamette Research and Extension Center, Aurora.*
 - East Oregon Agriculture Research Center, Union.*
 - Malheur Experiment Station, Ontario.*
 - Eastern Oregon Agriculture Research Center, Burns.*
 - Eastern Oregon Agriculture Research Center, Squaw Butte.*
 - Central Oregon Experiment Station, Madras.*
 - Central Oregon Experiment Station, Powell Butte.*
 - Central Oregon Experiment Station, Redmond.*
 - Central Station, Corvallis.*

Coastal Oregon Marine Experiment Station, Newport.

Southern Oregon Experiment Station, Medford.

Klamath Experiment Station, Klamath Falls.

(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.

....

The Council previously found that the Facility is not located in any protected area listed in OAR 345-022-0040 (ODOE 2008). Six protected areas are located within 20 miles of the Facility, four of which are located over 17 miles from the Site Boundary; impacts were deemed negligible. The remaining two sites (within 2 miles of the Site Boundary) had potential for impact: Willow Creek Wildlife Area and the Horn Butte U.S. Bureau of Land Management (BLM) Area of Critical Environmental Concern (ACEC) (described in Exhibit L of the ASC; Caithness Shepherds Flat, LLC 2007). The two sites were determined to have potential impacts from construction noise (Horn Butte has long-billed curlew nesting sites, which are a State Sensitive Vulnerable species) and visual impacts (Caithness Shepherds Flat, LLC 2007). No other impacts were found to occur, including impacts from operation noise, construction or operation traffic, construction or operation water, construction or operation wastewater, or air emissions. The Council found that the design, construction, and operation of the Facility was not likely to result in significant adverse impact to any protected area (ODOE 2008, ODOE 2009, ODOE 2010). The Council did not impose any conditions related to this standard. The change proposed in RFA 2 does not alter the basis of this finding.

One new protected area within the analysis area (see Figure 3) has been added under OAR 345-022-0040 since the previous findings were reached: Cottonwood Canyon State Park. Additionally, the Willow Creek Wildlife Area and the Horn Butte BLM ACEC are within the 20-mile analysis area of the two Demo Turbines (Figure 3). The change proposed in RFA 2 is not likely to result in significant adverse impacts to these protected areas. Upgrading activities will be short-term and performed during regular O&M activities, therefore the previously analyzed construction noise impacts are nonapplicable. The upgrades will increase the blade length and the overall turbine height (proposed height change from 135 to 150 meters) compared to the dimensions of the existing turbines installed at the Facility; however, the new height will remain lower than the previously approved maximum turbine height (150 meters) on which the original visual analysis was based. Therefore, RFA 2 will not alter the findings of the previous visual impact analysis, thus will not result in a new, adverse visual impact that was not previously evaluated by the Council.

RFA 2 will not introduce new operation noise, construction or operation traffic, construction or operation water, construction or operation wastewater, or air emission impacts that are different from what was previously authorized for the Facility. Traffic demands on local roads and highways in the vicinity of the Facility are low, and any effects during the Demo Turbine upgrades and operation are expected to be temporary and negligible, and will not adversely affect protected areas. Water use will continue to be primarily for sanitary purposes, and would be supplied by on-site wells. Sanitary wastewater would continue to be discharged to permitted on-site septic systems. This request does not seek to enlarge the existing Site Boundary, and there is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations of the Facility. Therefore, the proposed amendment makes no changes that would alter the basis for the Council's earlier findings, and the Council may find that this amendment request complies with OAR 345-022-0040.

6.7 Retirement and Financial Assurance – OAR 345-022-0050

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.*

The Council previously found that the Facility, taking into account mitigation, could be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation (ODOE 2008, ODOE 2009). In addition, the Certificate Holder has obtained a bond or letter of credit in a form that satisfies Site Certificate Condition 8, and will continue to adjust the amount of the bond or letter of credit on an annual basis per Site Certificate Condition 30.

The total site restoration cost for the Facility was originally estimated at \$9,076,000 (in 2010 dollars; ODOE 2010) and has been updated annually since construction per Site Certificate Condition 30. Of this amount, approximately \$4,106 was estimated per turbine for removal of nacelles and blades. Given that only two turbines are being upgraded, having blades and related equipment exchanged, the estimated impact on the full site restoration costs resulting from wrecking, hauling, and disposing of the larger turbine blades would not significantly alter the overall cost of site restoration, and no change is needed to the current decommissioning cost estimate. As such, the Council may find that the Facility, as modified, meets the Retirement Standard.

6.8 Fish and Wildlife Habitat – OAR 345-022-0060

To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are consistent with:

(1) The general fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025(1) through (6) in effect as of February 24, 2017, and

(2) For energy facilities that impact sage-grouse habitat, the sage-grouse specific habitat mitigation requirements of the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-415-0025(7) and OAR 635-140-0000 through -0025 in effect as of February 24, 2017.

6.8.1 *Potential Impacts to Habitat*

The changes to the Facility from RFA 2 will not result in additional habitat impacts in the analysis area (see Figure 3.), and therefore the Facility continues to satisfy the standard without need for additional habitat mitigation. The proposed increase in blade length at the two Demo Turbines does not present the potential to disturb habitat while in operation. As described in Section 3.0, the nature, duration, and extent of the disturbance to habitat related to the installation of the two Demo Turbines will be temporary, will occur over the course of approximately 2 weeks per turbine, will be limited to areas previously disturbed during construction, and be performed as part of routine O&M activities.

The habitat in the immediate vicinity of the Demo Turbines is Category 3 Grassland and Rabbitbrush Steppe, as described in the ASC and as shown in Figure 4. Vegetation disturbance in this area is projected to occur in an approximately 0.98-acre area (0.47 acre Category 3 Grassland; 0.46-acre Category 3 Rabbitbrush Steppe), primarily along the edges of Facility roads and turbine pads. The Certificate Holder has confirmed that there has not been a significant change in habitat types by comparing the habitat types described in the ASC with recent aerial imagery (Google Earth 2019). The disturbance will not result in different habitat types being affected than were affected during initial construction. There are no new areas or resources (e.g., different habitat types) to consider that were not previously evaluated. The disturbance area required for the upgrade will be within the previously disturbed areas from construction of the Facility. Areas temporarily disturbed by initial construction and subsequent wildfires have been revegetated, and are monitored for success in continuing compliance with Condition 84. No trees greater than 3 feet in height will be removed in continued compliance with Condition 89. The proposed replacement of turbine elements will not change the overall footprint of the Facility. Permanent impacts due to the construction of the Facility have been addressed in the Habitat Mitigation Plan. No permanent impacts to habitat will occur due to these O&M operations. Therefore, no updates to the Habitat Mitigation Plan are necessary. All temporarily disturbed areas will be revegetated according to Condition 77, as is routinely done as part of O&M activities, without need for additional habitat mitigation.

6.8.2 *Potential Impacts to State-Sensitive Wildlife Species*

The Certificate Holder has reviewed the status of state-sensitive wildlife species with the potential to occur within the Site Boundary, and presents an updated table (Table 3). Together, ASC Table P-2 and RFA 1 Table 1 provide an extensive list of species, inclusive of species with no current special status either federally or within the state, and inclusive of species with no habitat available within

the Site Boundary, as described in both documents (ODOE 2008, ODOE 2009). RFA 1 Table 1 also includes state-threatened, endangered, and candidate species, which are addressed in this amendment in Section 6.9. This updated list (Table 3) includes only species with current special status in the Columbia Basin Ecoregion and with available habitat within the Site Boundary.

Table 3. State Special-Status Species with the Potential to Occur within the Site Boundary

Common Name	Scientific Name	Federal Status ¹	Status in Columbia Basin - Columbia Plateau Ecoregion ²
Mammals			
Hoary bat	<i>Lasiurus cinereus</i>	SOC	S
Pallid bat	<i>Antrozous pallidus pacificus</i>	SOC	S
Silver-haired bat	<i>Lasionycteris noctivagans</i>	SOC	S
Spotted bat	<i>Euderma maculatum</i>	SOC	S
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	SOC	S
Birds			
Brewer's sparrow	<i>Spizella breweri</i>	BCC	S
Burrowing owl (western)	<i>Athene cunicularia hypugaea</i>	SOC	SC
Common nighthawk	<i>Chordeiles minor</i>	none	S
Ferruginous hawk	<i>Buteo regalis</i>	BCC, SOC	SC
Grasshopper sparrow	<i>Ammodramus savannarum</i>	none	S
Lewis's woodpecker	<i>Melanerpes lewis</i>	BCC, SOC	SC
Loggerhead shrike	<i>Lanius ludovicianus</i>	BCC	S
Long-billed curlew	<i>Numenius americanus</i>	BCC	SC
Sagebrush sparrow	<i>Artemisiospiza nevadensis</i>	BCC	SC
Swainson's hawk	<i>Buteo swainsoni</i>	none	S
Reptiles / Amphibians			
Northern sagebrush lizard	<i>Sceloporus graciosus graciosus</i>	SOC	S
Sources: OCS 2016; ODFW 2016; ORBIC 2016; OWE 2019; USFWS 2008, 2019. 1. Federal Status: T = Threatened, SOC = Species of Concern, BCC = Bird of Conservation Concern. 2. Oregon Department of Fish and Wildlife Status: SC = Sensitive-Critical Species, S = Sensitive Species.			

Notable is the addition of the hoary bat, Townsend's big-eared bat, and Brewer's sparrow; all three species are now sensitive in the Columbia Basin Ecoregion. The hoary bat roosts in the foliage of trees, generally in late-successional forest habitat (Csuti et al. 2001, OCS 2016). This species is most likely to occur within the Site Boundary as a transient during fall migration. Townsend's big-eared bat roosts in caves, mines, and isolated buildings, and will occasionally roost in trees (Csuti et al. 2001, OCS 2016). This species is also a potential transient.

Brewer's sparrow nests in sagebrush shrubland, generally with a canopy height of more than 5 feet, often associated with big sagebrush, in particular (OCS 2016, Rotenberry et al. 1999). This habitat is

limited within the Site Boundary. This migrant species is generally absent from Oregon from October through early March (Sullivan et al. 2009).

The common nighthawk, previously included in the ASC and RFA 1 without a special status designation at the federal or state level, is now sensitive in the Columbia Basin Ecoregion. Also a migrant species, the common nighthawk is generally absent from Oregon from mid-September through mid-May (Sullivan et. al 2009). Table 3 also reflects the updated species name for the sagebrush sparrow, which was listed in RFA 1 as sage sparrow (*Amphispiza belli*; Martin and Carlson 1998).

Potential impacts to these species during operation will continue to be avoided and minimized by existing Site Certificate measures, as specified in the Wildlife Monitoring and Mitigation Plan (WMMP), as required by Condition 83. The blade replacement process is projected to occur during the fall, which avoids sensitive time periods for nesting raptors (including Swainson's hawks, which winter in South America and are rarely recorded in Oregon during October; Sullivan et al. 2009) and all ground-nesting bird species. While no impact to raptors is anticipated during the upgrade process, a review of nearby raptor nests is presented here per the request of ODFW (Steve Cherry, personal communication, July 25, 2019). The most recent raptor nest survey report (performed in 2017 in compliance with Condition 83) identified one special-status species (Swainson's hawk) nesting in nine locations within 2 miles of the Site Boundary (Alsup and Smith 2018). The closest Swainson's hawk nest was found in a juniper located approximately 0.9 miles from Demo Turbine 368, and approximately 1.2 miles from Demo Turbine 370. Other nesting raptor species were American kestrel, red-tailed hawk, and great-horned owl. Neither bald nor golden eagles, which are protected by the federal Bald and Golden Eagle Protection Act, were found to be nesting within the search area in 2017. The historic golden eagle territory to the northwest of the Demo Turbines in Eightmile Canyon was occupied by red-tailed hawks in 2017. If the time period for the blade replacement activities at the Demo Turbines shifts to overlap with the nesting period for state-sensitive raptor species that have the potential to occur within the Site Boundary, such as the Swainson's hawk and ferruginous hawk, the Certificate Holder will consult with ODFW (Steve Cherry, personal communication, July 25, 2019).

The effect of turbine size on bird and bat collision rates remains unclear (AWWI 2017), particularly with respect to blade-only replacements without corresponding changes to hub height. A summary of findings from the most relevant studies are provided in Table 4. These studies reveal that numerous factors can influence avian and bat fatality rates at a given Facility, and indicate that difficulty remains in isolating the effect of a single variable.

Table 4. Summary of Studies Investigating the Effects of Turbine Size on Bird and Bat Mortality

Reference	Turbine Size Variables Investigated	Range of Variables Investigated	Findings
Barclay et al. 2007	Hub height	24-94 meters	Bat mortality increased with hub height; No effect on bird mortality
	Rotor swept area	167-5027 meters ²	No effect on bird or bat mortality
	Rotor diameter	15-80 meters	No effect on bird or bat mortality
de Lucas et al. 2008	Hub height	18-36 meters	Bird mortality increased with hub height
Everaert 2014	Rotor swept area (meters ²)	398-5281 meters ²	No effect on bird mortality
Loss et al. 2013	Hub height	36-80 meters	Bird mortality increased with hub height
Zimmerling and Francis 2016	Total turbine height	117-136 meters	No effect on bat mortality

While no single variable neatly correlates to collision risk to birds and bats, the proposed change to the Facility-wide rotor-swept area is a small-scale one – an increase of only 0.07 percent (1,004,444 square meters existing rotor-swept area; 1,011,418 square meters proposed) at only two out of 116 turbines; therefore, differences in avian and bat impacts as a result of the turbine modifications may be undetectable. The WMMP includes provisions for monitoring both bird and bat fatalities during operations. The Certificate Holder has demonstrated compliance with Condition 83 and remains committed to ongoing reporting and monitoring as specified in the WMMP. ODFW has requested that the Certificate Holder discuss the need for potential monitoring at these Demo Turbines if a larger repowering effort does not occur, and the Certificate Holder is committed to such coordination if repowering plans change (Steve Cherry, personal communication, July 25, 2019).

6.9 Threatened and Endangered Species – OAR 345-022-0070

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 Certificate Holder has reviewed the status of state-endangered, threatened, and candidate species with the potential to occur within the Site Boundary, and presents an updated table (Table 5).

Table 5. State-Listed Species with the Potential to Occur within the Site Boundary

Common Name	Scientific Name	Federal Status ¹	State Status ^{2, 3}
Mammals			
Washington ground squirrel	<i>Uroticellus washingtoni</i>	SOC	E
Plants			
Disappearing monkeyflower	<i>Mimulus evanescens</i>	none	C
Dwarf evening primrose	<i>Camissonia pygmaea</i>	SOC	C
Hepatic monkeyflower	<i>Mimulus jungermannoides</i>	SOC	C
Laurence's milk-vetch	<i>Astragalus collinus var. laurentii</i>	SOC	T
Sessile mousetail	<i>Myosurus sessilis</i>	SOC	C
Sources: ODA 2018, ODFW 2018, USFWS 2019.			
1. USFWS Federally Listed Species: SOC = Species of Concern.			
2. ODFW State Listed and Sensitive Species: E = Endangered, T = Threatened, S=Sensitive, SC = Sensitive Critical.			
3. ODA State Listed Plant Species: T=Threatened, E=Endangered, C=Candidate.			

ODFW lists 30 fish and wildlife species as threatened and endangered under ORS 496.172(2) (ODFW 2018). This includes 26 species associated with aquatic and marine environments that are absent from the Site Boundary. Of the remaining species, only the Washington ground squirrel (WAGS) is listed by the ORBIC (2016) as occurring in the Columbia Plateau Ecoregion (Table 4).

No state-threatened, endangered, or candidate plant species have been found to occur at the Facility (Table 4). The Council previously found that the design, construction, and operation of the Facility are not likely to cause a significant reduction in the likelihood of survival or recovery of Laurence's milk-vetch (*Astragalus collinus* var. *laurentii*), which has the potential to occur within limited habitats within the Site Boundary (ODOE 2008, ODOE 2009). No suitable habitats for the other state-threatened, endangered or candidate plant species that have the potential to occur (based on range) have been identified within the Site Boundary. Revegetated areas of potential disturbance around the two Demo Turbines are not suitable habitat for any state-threatened, endangered, or candidate plant species, including Laurence's milk-vetch; therefore, no adverse effect to threatened, endangered, or candidate plant species is expected as a result of RFA 2.

A single WAGS burrow was located within the Site Boundary, as described in the ASC and RFA 1 (ODOE 2008, ODOE 2009). This burrow is located more than 4 miles southeast of the two Demo Turbines. This colony was monitored in compliance with Conditions 86 and 83, and was determined to be active on February 14, 2012, and inactive on June 6, 2012. Revegetated areas of potential disturbance around the two Demo Turbines are not suitable habitat for WAGS. No additional WAGS colonies have been identified within the Site Boundary; therefore, as stated in the Final Orders (ODOE 2008, ODOE 2009), the operation of the Facility is unlikely to cause a significant reduction in the likelihood of survival or recovery of this species.

No additional state-endangered, threatened, or candidate wildlife species have been recorded within the Site Boundary. Revegetated areas of potential disturbance around the two Demo Turbines are not suitable habitat for these species. The proposed decrease in blade ground clearance at the two Demo Turbines presents no additional risk to any of these species. The proposed amendment requests no changes that would alter the basis for the Council's earlier findings, and therefore, the Council may find that the amendment request satisfies OAR 345-022-0070.

6.10 Scenic Resources – OAR 345-022-0080

(1) Except for facilities described in section (2), 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 impact to scenic resources and values 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 described in the project order.

(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.

The Council previously found that the design, construction, and operation of the Facility, as amended, was not likely to result in significant adverse impact to scenic resources and values identified as significant or important in applicable federal land management plans or in local land use plans in the analysis area after taking mitigation into account and subject to the Site Certificate

conditions (ODOE 2008, ODOE 2009, ODOE 2010). The change proposed in RFA 2 does not alter the basis of this finding.

As noted in the Final Order on the ASC, the Certificate Holder completed a Zone of Visual Influence (ZVI) analysis (for turbines up to 492 feet or 150 meters tall) within a 30-mile analysis area to evaluate potential visual impacts related to the change in existing visual character that would result from operation of the Facility. The 30-mile analysis area was specified by the Project Order, issued October 16, 2006, based on Council rules in effect at that time. The Council amended OAR 345-001-0010(57) in May 2007, reducing the “study area” for scenic resources to the area within the site boundary and the area within 10 miles from the site boundary. The Study Area for RFA 2 is discussed in Section 3.3 and shown on Figure 3, and is 10-miles from the Demo Units. Morrow, Gilliam, and Klickitat counties are the only counties within the 10-mile analysis area around the Demo Turbine locations (Figure 3). The only land use or management plans that have been updated since the last amendment for the Facility within the analysis area is Gilliam County (updated in 2017). The update did not identify additional scenic resources or include provisions that would warrant changes to the previous analyses of scenic resources in Gilliam County.

The changes proposed in RFA 2 will not change the Council’s previous findings regarding potential visual impacts to identified scenic resources. Upgrading the turbines will increase the blade length and the overall turbine height (proposed height change from 135 to 150 meters or 492 feet) relative to the dimensions of the existing turbines installed at the Facility. However, the new height for the Demo Turbines will remain at the maximum turbine height approved by the Council. The ZVI analysis reported in the Final Order on the ASC was for turbines up to 492 feet in height (ODOE 2008). Therefore, the conclusion of the previous visual impact analysis that the Facility with 492-foot turbines would not result in a significant adverse impact to important scenic resources applies to RFA 2.

This request does not seek to enlarge the existing Site Boundary of the Facility. The footprint required for the upgrading will be within the previously disturbed areas from construction of the Facility and will occur during regular O&M activities. There is no change to the previously approved maximum number of turbines, maximum turbine height, maximum generating capacity, or infrastructure locations of the Facility. Consequently, the proposed amendment requests no changes that would alter the basis for Council’s earlier findings, and therefore, Council may find that the amendment request satisfies OAR 345-022-0080.

6.11 Historical, Cultural and Archaeological Resources – OAR 345-022-0090

(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 impacts to:

(a) Historic, cultural or archaeological resources that have been listed on, or would likely be listed on the National Register of Historic Places;

(b) For a facility on private land, archaeological objects, as defined in ORS 358.905(1)(a), or archaeological sites, as defined in 358.905(1)(c); and

(c) For a facility on public land, archaeological sites, as defined in ORS 358.905(1)(c).

(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.

The analysis area for Exhibit S of RFA 2 is limited to the footprint of the two Demo Turbines. This area is within the Site Boundary that defined the analysis area examined in Exhibit S of the ASC (Caithness Shepherds Flat, LLC 2007).

The Certificate Holder provided information regarding historic, cultural, and archaeological resources for the analysis area (all areas within the Site Boundary) in Exhibit S of the ASC (Caithness Shepherds Flat, LLC 2007). In the Final Order on the ASC for the Shepherds Flat Wind Farm, the Council reviewed cultural resource surveys of the areas within the Site Boundary (ODOE 2008). Cultural resource studies were conducted in support of the ASC and in consultation with the State Historic Preservation Office, the Confederated Tribes of Warm Springs and the Confederated Tribes of the Umatilla Indian Reservation (Ellis et al. 2006, Adams et al. 2008, AINW 2008). An additional survey of Facility areas (DePasqual and Nickoloff 2012) was conducted following award of the Site Certificate, but prior to construction.

Ellis et al. (2006), Adams et al. (2008), and DePasqual and Nickoloff (2012) surveyed the analysis area of RFA 2. No cultural resources were identified by any of the surveys within or near the analysis area. The Council adopted Site Certificate conditions, including mitigation and inadvertent discovery measures (Conditions 43, 45, and 46 applicable to operations) to address the Historic, Cultural and Archaeological Resources Standard; thus the Facility satisfied the Historic, Cultural and Archaeological Resources Standard (ODOE 2008, ODOE 2009, ODOE 2010). The Facility is already constructed such that the Certificate Holder met all pre-construction and construction conditions, and will continue to meet operation conditions as documented through annual reporting.

The upgrading of the two Demo Turbines will not increase ground disturbance from what was previously surveyed or disturbed, or otherwise alter the Council's previous findings regarding the Historic, Cultural and Archaeological Resources Standard. The surface area and depths that will be disturbed during upgrading were previously disturbed from construction of the Facility and previously approved in the ASC. The Certificate Holder will continue to adhere to the Site Certificate conditions, specifically those regarding inadvertent discoveries.

The two upgraded Demo Turbines will not affect cultural resources. Upgrading will increase the blade length and the overall turbine height (proposed height change from 135 to 150 meters) relative to the dimensions of the existing turbines installed at the Facility. The difference in height for the two Demo Turbines will be minor, however, and will not likely be noticeable to observers in the vicinity of any nearby cultural resources. In addition, the new height will remain lower than the maximum turbine height approved under the Final Order on the ASC, which provided the basis for the original impact analysis (ODOE 2008). This request does not seek to enlarge the existing Site Boundary or to change the previously approved maximum number of turbines, maximum turbine height, maximum generating capacity, or infrastructure locations of the Facility. No cultural resources were identified within the analysis area during surveys or previous construction activities, and although no impacts are expected, impacts to any unidentified cultural resources protected by the Council siting standards will continue to be avoided through implementation of the inadvertent discovery condition of the Site Certificate (Condition 45). Thus, the proposed amendment makes no changes that would alter the basis for Council's earlier findings. No changes to the Site Certificate conditions related to the Historic, Cultural and Archaeological Resources Standard are required and OAR 345-022-0090 is met.

6.12 Recreation – 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:

- (a) Any special designation or management of the location;*
- (b) The degree of demand;*
- (c) Outstanding or unusual qualities;*
- (d) Availability or rareness;*
- (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.

The Recreation Standard requires the Council to find that the design, construction, and operation of a facility will not likely result in significant, adverse impacts to important recreational opportunities. Therefore, the Council's Recreation Standard applies to only those recreation areas that the Council deems important. The Council previously found that the design, construction, and operation of the Facility, as amended, were not likely to result in significant adverse or direct impact to important recreational opportunities in the analysis area (ODOE 2008, ODOE 2009, ODOE 2010). The Council did not impose any conditions related to this standard. The Council did not identify any recreational opportunities within the 5-mile analysis area as important according to

the factors listed in the Recreation Standard. Therefore, the Council previously found that the Facility would have no direct effect on any important recreational opportunities in the analysis area. The change proposed in RFA 2 does not alter the basis of this finding.

The site of the Demo Turbines locations and corresponding 5-mile analysis area (Figure 3) offers no new or previously recognized recreational opportunities. This request does not seek to enlarge the existing Site Boundary, and there is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations of the Facility. The proposed amendment makes no changes that would alter the basis for the Council's earlier findings, or its conclusion that the Facility would not likely result in a significant adverse impact to any important recreational opportunities in the analysis area, and therefore the amendment request meets the requirement of OAR 345-022-0100.

6.13 Public Services – OAR 345-022-0110

(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 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.

The Council relied on information provided in the ASC and in subsequent amendment requests to conclude that the Public Services Standard was met for the existing Facility (Caithness Shepherds Flat, LLC 2007, ODOE 2008, ODOE 2009, ODOE 2010). This information included measures to mitigate impacts and the ability of providers to provide public services. The Council adopted Site Certificate conditions to address the Public Services Standard: Conditions 27, 53, 54, 55, 56, 69, 70, 78, and 100 are directly applicable to operations and upgrading of the two Demo Turbines (see Table 2). The Facility is already constructed such that the Certificate Holder met all pre-construction and construction conditions and is meeting and will continue to meet operation conditions as documented through annual reporting. The upgrading and operation of the two Demo Turbines does not affect the Certificate Holder's ability to comply with the Site Certificate conditions as written.

The proposed upgrades to the two Demo Turbines will not affect any aspect of the analysis conducted to support issuance of the Site Certificate with regards to public services. The Facility is

already constructed, and the Demo Turbine upgrades will be conducted as part of O&M. The upgrade work for the Facility will be short-term and temporary; no operations staff changes are expected following the installation of the two Demo Turbines, and therefore no new, permanent residents would require housing, schools, or other services. Water will continue to be provided by an on-site well, and sanitary water will be disposed of at on-site septic systems. RFA 2 makes no changes to the Facility configuration, and there are no other circumstances that would alter the basis for the Council's earlier determination. Accordingly, the Council may find that the proposed amendment meets OAR 345-022-0110 and no changes to the Site Certificate conditions related to the Public Services Standard are required.

6.14 Waste Minimization – OAR 345-022-0120

(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.

The Certificate Holder provided plans in Exhibit V of the ASC for solid waste and wastewater management during construction and operation of the Facility (Caithness Shepherds Flat, LLC 2007). The Council adopted Site Certificate conditions to address the Waste Minimization Standard: Conditions 50, 51, 100, and 102 are directly applicable to operations and upgrading the Demo Turbines. The Facility is already constructed such that the Certificate Holder met all pre-construction and construction conditions, and will continue to meet operation conditions as documented through annual reporting. The Council previously found that the accumulation, storage, disposal, and transportation of waste generated by construction and operation of the Facility are not likely to have an adverse impact on surrounding and adjacent areas (ODOE 2008).

Solid waste from the upgrading of two turbines during regular O&M activities will not exceed the existing amount of solid waste generated from the Facility. Most solid waste will be removed from the site and reused, recycled, or disposed of at an appropriate facility and in compliance with U.S. Environmental Protection Agency standards. Metal components will be transported to a smelter to

be melted down, and fiberglass components will be cut to standard truck-load size on site (with dust control) and transported to a certified fiberglass landfill. Any batteries, oils, light bulbs, or e-waste will be put in appropriate waste disposal bins provided by U.S. Ecology and transported to GE Renewables' approved recycling and disposal facilities. Water used during upgrading would continue to be discharged to on-site septic systems, and water would not be discharged to wetlands, lakes, rivers, or streams. Hazardous materials that could potentially be used at the Facility during upgrading include lubricating oils.

RFA 2 will not impact the Facility's ability to comply with existing Site Certificate conditions for waste management, and is not anticipated to increase the amount of solid waste and wastewater generated by the Facility. This request does not seek to enlarge the existing Site Boundary, and the upgrading will be short-term and temporary during regular O&M activities. There is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations from what was originally authorized. The two upgraded Demo Turbines will not increase the amount of solid waste or wastewater that was previously approved for the Facility and will not change the Council's previous analysis of waste minimization. Therefore, Council may rely on its prior analysis to conclude that OAR 345-022-0120 is met and no changes to the Site Certificate conditions related to the Waste Minimization Standard are required.

6.15 Public Health and Safety Standards for Wind Energy Facilities – OAR 345-024-0010

To issue a site certificate for a proposed wind energy facility, the Council must find that the applicant:

(1) Can design, construct and operate the facility to exclude members of the public from close proximity to the turbine blades and electrical equipment.

(2) Can design, construct and operate the facility to preclude structural failure of the tower or blades that could endanger the public safety and to have adequate safety devices and testing procedures designed to warn of impending failure and to minimize the consequences of such failure.

The Council previously found that the Facility complies with the Public Health and Safety Standards for wind energy facilities (ODOE 2008, ODOE 2009, ODOE 2010). This finding was based on the conclusion that the Certificate Holder could design, construct, and operate the Facility to preclude structural failure of the tower or blades that could endanger public safety, to have adequate safety devices and testing procedures designed to warn of impending failure, and to minimize the consequences of such failure. RFA 2 would not have any additional impact on compliance with the Public Health and Safety Standard for wind facilities.

The proposed changes are on two existing turbines in rural eastern Oregon, located entirely on private property that restricts public access to turbine and other Facility component locations in compliance with Site Certificate Conditions 61 and 64. The Facility is already constructed such that the Certificate Holder met all pre-construction and construction conditions, will continue to meet

operation conditions as documented through annual reporting. The Facility currently excludes members of the public from close proximity to the turbine blades and electrical equipment through a combination meeting all turbine setbacks, the Facility's location on private land, and the limited population base in the vicinity. The Demo Turbines would be operated in the same manner after upgrades are complete. The turbine modifications would be designed with several levels of built-in safety and comply with the codes set forth by the Occupational Safety and Health Administration and American National Standards Institute.

In accordance with Site Certificate Condition 62, an operational safety-monitoring program continues to be implemented to monitor and repair turbines and turbine components as necessary to protect public safety. In accordance with Site Certificate Condition 59, the Certificate Holder continues to follow the manufactures' handling instructions and procedures for new turbine components needed for upgrading. Per Site Certificate Condition 71, if any accidents or mechanical failures occur, they will be reported to ODOE and Gilliam and Morrow counties. Additionally, no changes to the transmission lines are proposed, but the lines will continue to be monitored and maintained per Site Certificate Condition 81 to protect the public from exposure to electromagnetic fields.

The fire risks for Facility configuration are similar to the risks previously considered by the Council. Site Certificate conditions addressing fire protection and response in relation to operations include Site Certificate Conditions 53, 54, 55, 56, 58, and 60. The changes requested by RFA 2 would not result in new fire risks that would be different from the types of risk already considered by the Council; therefore, no new fire protection conditions are necessary.

Because the upgrading of the two Demo Turbines will alter the existing turbine height, the Certificate Holder will be required to submit a Notice of Alteration to the FAA, per Site Certificate Condition 57. As done previously, the results of this notice will be provided to the Oregon Department of Agriculture and the Boardman Military Operating Area, which lies east of the two Demo Turbines. Determinations of No Hazard to Air Navigation have been received for all previously constructed turbines at the Facility. Although the Certificate Holder does not anticipate any issues, should the FAA find that the impact of one or both of these turbines exceed an acceptable threshold of impact, mitigation options are available and will be implemented.

Upgrading will increase the blade length and the overall turbine height on two turbines relative to the dimensions of the existing turbines at the Facility. However, the new height will remain lower than the previously approved maximum turbine height on which the original visual analysis was based. The proposed modifications to the two turbines would result in a maximum blade tip height that is lower than most turbine dimensions that are currently approved by the Council. Similarly, this RFA requests a modified minimum blade tip clearance that is higher than the minimum blade tip clearance currently approved for most facilities under Council jurisdiction. In accordance with Site Certificate Conditions 93 and 95, visual impacts from the taller turbines will continue to be minimized through implementation of exterior nighttime lighting policies, prohibition of advertising material at the Facility, and maintenance of on-site signage.

This request does not seek to enlarge the existing Site Boundary, and there is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations from what was originally authorized. The proposed amendment makes no changes that would alter the basis for the Council's earlier findings, nor change the Certificate Holder's ability to comply with the intent of any requirements and conditions issued by the Council regarding public health and safety. Therefore, the Council may find that OAR 345-024-0010 is satisfied.

6.16 Siting Standards for Wind Energy Facilities – OAR 345-024-0015

To issue a site certificate for a proposed wind energy facility, the Council must find that the applicant can design and construct the facility to reduce cumulative adverse environmental effects in the vicinity by practicable measures including, but not limited to, the following:

- (1) Using existing roads to provide access to the facility site, or if new roads are needed, minimizing the amount of land used for new roads and locating them to reduce adverse environmental impacts.*
- (2) Using underground transmission lines and combining transmission routes.*
- (3) Connecting the facility to existing substations, or if new substations are needed, minimizing the number of new substations.*
- (4) Designing the facility to reduce the risk of injury to raptors or other vulnerable wildlife in areas near turbines or electrical equipment.*
- (5) Designing the components of the facility to minimize adverse visual features.*
- (6) Using the minimum lighting necessary for safety and security purposes and using techniques to prevent casting glare from the site, except as otherwise required by the Federal Aviation Administration or the Oregon Department of Aviation.*

The Council previously found that the Certificate Holder could design and construct the Facility to reduce visual impacts, to restrict public access, and to reduce cumulative adverse environmental impacts in the vicinity of the Facility to the extent practicable in accordance with the requirements of OAR 345-024-0015 (ODOE 2008, ODOE 2009, ODOE 2010). Specifically, in approving the ASC, the Council considered and made findings regarding cumulative impacts of the Facility related to 1) roads, 2) transmission lines and substations, 3) wildlife protection, 4) visual features, and 5) lighting. The Council adopted Site Certificate conditions to address the Siting Standard: Site Certificate Conditions 58, 86, 93 and 95 are directly applicable to the proposed change and operations. The Facility is already constructed such that the Certificate Holder met all pre-construction and construction conditions, and will continue to meet operation conditions as documented through annual reporting.

The Facility is operational, with existing access roads that would be used for this RFA to upgrade two turbines during O&M activities. There would be no changes to the existing substation or transmission line. Although the Demo Turbines, existing turbines would have an increased height,

the changes to visual impact on protected areas or public viewing areas would not be significant. Upgrading the Demo Turbines will increase the blade length and the overall turbine height compared to the dimensions of the existing turbines at the Facility; however, the new height will remain lower than the previously approved maximum turbine height on which the original visual analysis was based. Site Certificate Condition 93 has and will continue to be implemented to minimize visual impacts through the prohibition of advertising material at the Facility and maintenance of onsite signage. The increased height could result in an increased bird and bat fatality risk from wind turbine collision and will continue to be remediated through implementation of actions described in the WMMP. Disturbance in areas described in Site Certificate Condition 86 to reduce the risk of injury to raptors or other vulnerable wildlife will continue to be avoided. This request does not seek to enlarge the existing Site Boundary, rather the upgrading will occur at two existing turbines within the existing Site Boundary. The footprint required for the upgrades to the Demo Turbines will be within the previously disturbed areas from construction of the Facility. Proposed changes would not significantly affect wetlands or other waters of the state because the Facility is already constructed and was sited to avoid these water bodies. There would be no changes to lighting as part of RFA 2 other than those that may be required by FAA although changes are not anticipated. Condition 95 which imposed exterior nighttime lighting policies shall continue to be enforced during operation and upgrading. There is no change to the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations from what was originally authorized. The proposed amendment makes no changes that would alter the basis for the Council's earlier findings, and therefore, the proposed amendment request satisfies OAR 345-024-0015.

6.17 Noise Control Regulations – OAR 340-035-0035

OAR Chapter 340, Division 35 prescribes noise regulations applicable throughout the State of Oregon, with specific requirements in OAR 340-035-0035, "Noise Control Regulations for Industry and Commerce." This standard provides guidance for new noise sources on a previously used site:

OAR 340-035-0035(1)(b)(A) New Sources Located on Previously Used Sites. No person owning or controlling a new industrial or commercial noise source located on a previously used industrial or commercial site shall cause or permit the operation of that noise source if the statistical noise levels generated by that new source and measured at an appropriate measurement point, specified in subsection (3)(b) of this rule, exceed the levels specified in Table 8, except as otherwise provided in these rules. For noise levels generated by a wind energy facility including wind turbines of any size and any associated equipment or machinery, subparagraph (1)(b)(B)(iii) applies.

Table 8 of OAR 340-035-0035 gives statistical noise limits, as summarized below in Table 6. All limits are presented in terms of A-weighted decibels (dBA). The L₅₀ is the median sound level (50 percent of the measurement interval is above this level, 50 percent is below). The noise limits apply at "appropriate measurement points" on "noise sensitive property." The noise limits apply at "appropriate measurement points" on "noise sensitive property." The appropriate measurement point is defined as whichever of the following is farther from the noise source:

- 25 feet toward the noise source from that point on the noise sensitive building nearest the noise source; or
- The point on the noise sensitive property line nearest the noise source.

“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.”

Table 6. New Industrial and Commercial Noise Standards

Statistical Descriptor	Maximum Permissible Statistical Noise Levels (dBA)	
	Daytime (7:00 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
L ₅₀	55	50
L ₁₀	60	55
L ₁	75	60
Source: OAR 340-035-0035, Table 8.		

As stated above, OAR 340-035-0035(1)(b)(B)(iii) specifically applies to sound generated by a wind energy facility. The increase in ambient statistical noise levels is based on an assumed background L₅₀ ambient sound level of 26 dBA or the actual ambient background level. Compliance for wind energy facilities is determined based on:

(III) The noise levels from a wind energy facility may increase the ambient statistical noise levels L₁₀ and L₅₀ by more than 10 dBA (but not above the limits specified in Table 8), if the person who owns the noise sensitive property executes a legally effective easement or real covenant that benefits the property on which the wind energy facility is located. The easement or covenant must authorize the wind energy facility to increase the ambient statistical noise levels, L₁₀ or L₅₀ on the sensitive property by more than 10 dBA at the appropriate measurement point.

(IV) For purposes of determining whether a proposed wind energy facility would satisfy the ambient noise standard where a landowner has not waived the standard, noise levels at the appropriate measurement point are predicted assuming that all of the proposed wind facility's turbines are operating between cut-in speed and the wind speed corresponding to the maximum sound power level established by IEC 61400-11 (version 2002-12). These predictions must be compared to the highest of either the assumed ambient noise level of 26 dBA or to the actual ambient background L₁₀ and L₅₀ noise level, if measured. The facility complies with the noise ambient background standard if this comparison shows that the increase in noise is not more than 10 dBA over this entire range of wind speeds.

(VI) For purposes of determining whether a proposed wind energy facility would satisfy the Table 8 standards, noise levels at the appropriate measurement point are predicted by using the turbine's maximum sound power level following procedures established by IEC 61400-11 (version

2002-12), and assuming that all of the proposed wind facility's turbines are operating at the maximum sound power level.

OAR 340-035-0035(5) specifically exempts construction activity from the state noise standards and regulations, as indicated below. This section also provides an exemption for maintenance of capital equipment, the operation of aircraft (such as helicopters used in construction), and sounds created by activities related to timber harvest.

Exemptions: Except as otherwise provided in subparagraph (1)(b)(B)(ii) of this rule, the rules in section (1) of this rule shall not apply to:

[section abridged for brevity]

(b) Warning devices not operating continuously for more than 5 minutes;

(g) Sounds that originate on construction sites.

(h) Sounds created in construction or maintenance of capital equipment;

(j) Sounds generated by the operation of aircraft and subject to pre-emptive federal regulation. This exception does not apply to aircraft engine testing, activity conducted at the airport that is not directly related to flight operations, and any other activity not pre-emptively regulated by the federal government or controlled under OAR 340-035-0045;

(k) Sounds created by the operation of road vehicle auxiliary equipment complying with the noise rules for such equipment as specified in OAR 340-035-0030(1)(e);

OAR 340-035-0035(6) allows for some exceptions to the state noise regulations:

Exceptions: Upon written request from the owner or controller of an industrial or commercial noise source, the Department may authorize exceptions to section (1) of this rule, pursuant to rule 340-035-0010, for:

(a) Unusual and/or infrequent events;

(b) Industrial or commercial facilities previously established in areas of new development of noise sensitive property;

(c) Those industrial or commercial noise sources whose statistical noise levels at the appropriate measurement point are exceeded by any noise source external to the industrial or commercial noise source in question;

(d) Noise sensitive property owned or controlled by the person who controls or owns the noise source;

(e) Noise sensitive property located on land zoned exclusively for industrial or commercial use.

As originally proposed and amended (in the ASC and RFA 1), the Council concluded that the Facility, subject to site certificate conditions, would comply with the applicable state noise regulations. In support of RFA 1, the Certificate Holder conducted a noise study based on a layout of 116 GE Renewables 2.5-MW turbines, representing the final Facility design layout. All turbines were

modeled at maximum rotation, with total sound power of 105 dB. The noise study results indicated compliance with the Oregon Department of Environmental Quality (ODEQ) 50 dBA L₅₀ limit at all 39 of the noise sensitive receptors (NSRs). However, noise levels at five of the 39 NSRs (R-12, R-13, R-14, R-15, and R-13) were predicted to exceed the ambient hourly L₅₀ ambient degradation limit of 36 dBA. Therefore, noise waivers were obtained from all five NSRs. The study showed that noise levels would be in compliance with the ODEQ ambient noise degradation rule at the remaining 34 of 39 NSRs.

RFA 2 proposes to upgrade two of the 116 existing turbines. The two Demo Turbines are expected to have sound power properties similar to the existing turbines, with a total sound power of 105 dB at maximum rotation. To satisfy Condition 97, the potential impact of the upgrade has been assessed for the NSRs surrounding the facility.

The nearest NSRs to the two Demo Turbines are R-32 and R-39 (see Figure 5)². The original noise study demonstrated that received sound levels at both NSRs were predicted to be well below the ODEQ 50 dBA L₅₀ limit. Received sound levels at both NSRs were also predicted to be well below 36 dBA, and therefore in compliance with the ODEQ ambient noise degradation rule. Both NSRs are located approximately 4.5 kilometers away from the demo turbines. At this distance, received sound from the two Demo Turbines by themselves would attenuate to well below the assumed background L₅₀ ambient noise level of 26 dBA. Given that the total sound power is not expected to increase as a result of upgrading the two Demo Turbines, the impact would be negligible at this distance. Therefore, noise levels at NSRs R-32 and R-39 are expected to remain in compliance with state noise control regulations.

The next closest NSRs are R-12, R-13, R-14, and R-15, clustered together approximately 5.5 kilometers away from the proposed Demo Turbines. As with NSRs R-32 and R-39, since total sound power is not expected to increase as a result of upgrading the two Demo Turbines, the impact would be negligible at this distance. Additionally, noise waivers were previously obtained from all four NSRs. Therefore, noise levels at NSRs R-12, R-13, R-14, and R-15 are expected to remain in compliance with state noise control regulations.

All other NSRs are located over 6 kilometers away, and are unlikely to be affected by upgrading of the two Demo Turbines. The Facility will maintain a complaint response system to address noise complaints, as part of Condition 98.

Construction or short term activities are categorically exempted under OAR 340-35-0035(5)(g). Because the noise from upgrading is short term, it is not expected to result in any significant long-term impacts at any NSRs. Condition 96 will continue to be applied with use of heavy construction equipment confined to daylight hours, mufflers required on all combustion engine-powered equipment, and a complaint response system in place as needed.

² NSRs in proximity to the Demo Units were determined by review of Google Earth data (June 2019), Gilliam County Assessor Data (July 2019), and correspondence with the Facility's on-site manager.

6.18 Removal-Fill Law

The Oregon Removal-Fill Law (ORS 196.795 through ORS 196.990) and Oregon Department of State Lands regulations (OAR 141-085- 0500 through OAR 141-085-0785) require a removal-fill permit if 50 cubic yards or more of material is removed, filled, or altered within any “waters of the state.”

The Certificate Holder provided information regarding wetlands and other waters of the state in Exhibit J of the ASC (Caithness Shepherds Flat, LLC 2007). A removal-fill permit is not needed for RFA 2, because like Facility construction, the proposed changes will not temporarily or permanently impact waters of the state.

6.19 Water Rights

Under ORS Chapters 537 and 540 and OAR Chapter 690, the Oregon Water Resources Department (OWRD) administers the appropriation of water rights and regulates the use of the water resources of the state. The Council previously found that the facility would comply with the Ground Water Act of 1955 and the rules of OWRD (ODOE 2008, ODOE 2009, ODOE 2010). The upgrading of the two Demo Turbines does not alter the Certificate Holder’s ability to obtain water from the City of Arlington (as proved in Exhibit O of the ASC) during construction, nor its intended use of less than 5,000 gallons per day of water from an on-site well during operations (per Condition 78). Construction water requirements are no longer applicable because the Facility is already constructed and is in the O&M phase. Therefore, the modification proposed under RFA 2 does not alter the amount of water or procurement sources from what has been permitted for the Facility, and the Council may rely on its prior findings that the Facility complies with the Ground Water Act of 1955 and the rules of OWRD.

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

(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:

** * **

(f) 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). Property adjacent to the site boundary means property that is: (C) Within 500 feet of the site boundary where the site, corridor or micrositings corridor is within a farm or forest zone.

An updated list and associated map of property owners is provided in Attachment 6.

8.0 Conclusion

Based on the findings and conclusions discussed above regarding the proposed change in RFA 2, the Council can make the following findings:

1. RFA 2 complies with the requirements of the Oregon Energy Facility Siting Statutes, ORS 469.300 to ORS 469.570 and 469.590 to 469.619.
2. RFA 2 complies with the applicable standards adopted by the Council pursuant to ORS 469.501.
3. RFA 2 complies with all other Oregon statutes and administrative rules applicable to the amendment of the site certificate that are within the Council's jurisdiction.

Therefore, the Council may approve the Certificate Holder's RFA2 and Type B review path.

9.0 References

- Adams, Ron, Genavie Thomas, Jonathan Held, and Terry Ozbun. 2008. Cultural Resource Survey for the Proposed Shepherds Flat Wind Farm Project, Gilliam and Morrow Counties, Oregon. Archaeological Investigations Northwest, Inc., Portland, Oregon. Submitted to Caithness Shepherds Flat, LLC, New York, New York. SHPO Survey Report #21721.
- AINW (Archaeological Investigations Northwest, Inc.). 2008. Cultural Resource Survey for the Proposed Shepherds Flat Wind Farm Project, Gilliam and Morrow Counties, Oregon, Addendum One: Supplemental Survey Area. Portland, Oregon.
- Alsop, Steve and Smith, Jaya. 2018. Raptor Nest Survey and Monitoring Report: Shepherd's Flat Central, 2017. Prepared for: South Hurlbut Wind, LLC. Prepared by: Bionomics Environmental Inc. March 2018.
- AWWI (American Wind Wildlife Institute). 2017. Wind Turbine Interactions with Wildlife and Their Habitats – A Summary of Research Results and Priority Questions. 2017. American Wind Wildlife Institute 1110 Vermont Avenue, NW, Suite 950 Washington, DC 20005-3544.
- Barclay, R.M.R., E.F Baerwald, J.C. Gruver. 2007. Variation in bat and bird fatalities at wind energy facilities: assessing the effects of rotor size and tower height. Canadian Journal of Zoology 85:381–387.
- Beseda, Benjamin. 2019. Re: Shepherds Flat Turbine Setback Analysis. Prepared by Tenneson Engineering Corporation, The Dalles, OR. Prepared for Caithness Shepherds Flat, New York, NY. June 7, 2019.
- Brigham, R. M., J. Ng, R. G. Poulin, and S. D. Grindal. 2011. Common Nighthawk (*Chordeiles minor*), version 2.0. In *The Birds of North America* (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.

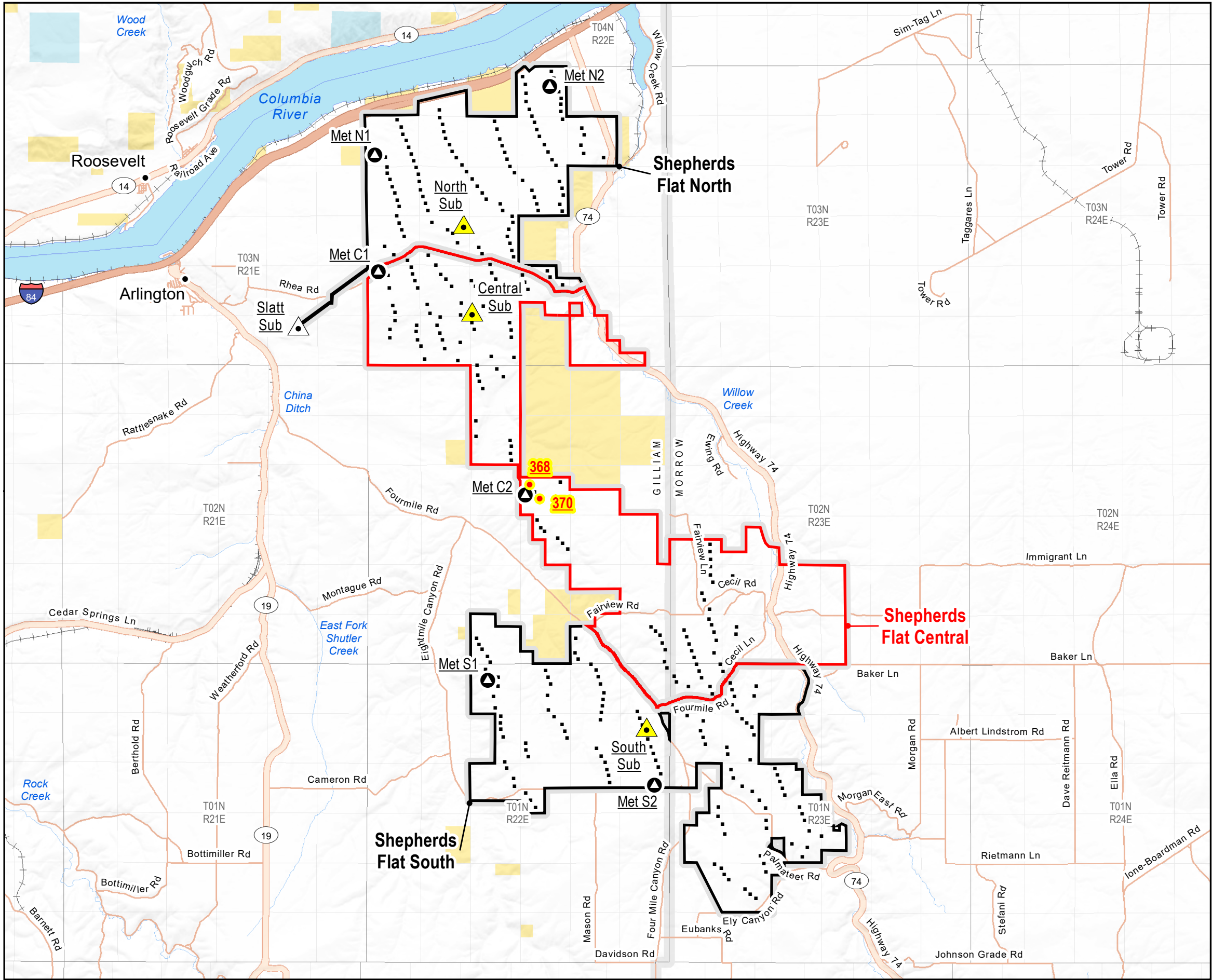
- Caithness Shepherds Flat, LLC. 2007. Application for a Site Certificate for the Shepherds Flat Wind Farm. Prepared for Oregon Energy Facility Siting Council. January 2007.
- Csuti, B., T.A. O'Neil, M. M. Shaughnessey, and C. J. Hak. 2001. Atlas of Oregon Wildlife: Distribution, Habitat, and Natural History.
- DePasqual, Seth C., and Niki Nickoloff. 2012. Archaeological and Historic Survey Addendum, Shepherds Flat Central Wind Farm Project. Bionomics Environmental, Inc., Eagle, Idaho. Submitted to Caithness Shepherds Flat, LLC. SHPO Survey Report #29399.
- Everaert, J. 2014. Collision risk and micro-avoidance rates of birds with wind turbines in Flanders. *Bird Study* 61(2): 220-230.
- Ellis, David V., Todd Ogle, and Jason M. Allen. 2006. A Cultural Resource Overview of the Proposed Shepherds Flat Wind Farm Project, Gilliam and Morrow Counties, Oregon. Archaeological Investigations Northwest, Inc., Portland, Oregon. Submitted to LifeLine Renewable Energy, Inc., Sacramento, California. SHPO Survey Report #20535.
- Google Earth. 2019. Aerial imagery of Gilliam and Morrow counties. Image date: 6/14/2019.
- de Lucas, M., G. F. E. Janss, D. P. Whitfield and M. Ferrer 2008. Collision fatality of raptors in wind farms does not depend on raptor abundance. *Journal of Applied Ecology* 45(6): 1695-1703.
- Loss, S.R., T. Will, and P. Marra. 2013. Estimates of bird collision mortality at wind facilities in the contiguous United States. *Biological Conservation* 168:201-209.
- Martin, J. W., and B. A. Carlson. 1998. Sagebrush Sparrow (*Artemisiospiza nevadensis*), version 2.0. In *The Birds of North America* (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.
- OCS (Oregon Conservation Strategy). 2016. Oregon Conservation Strategy species. Oregon Department of Fish and Wildlife, Salem, Oregon.
- ODA (Oregon Department of Agriculture). 2018. Oregon Listed and Candidate Plants. <https://www.oregon.gov/ODA/programs/PlantConservation/Pages/AboutPlants.aspx>. Accessed July 2019.
- ODOE (Oregon Department of Energy). 2008. Final Order on the Application for Site Certificate for the Shepherds Flat Wind Farm. July 25, 2008.
- ODOE. 2009. Final Order on Amendment 1 of the Site Certificate for the Shepherds Flat Wind Farm. September 11, 2009.
- ODOE. 2010. Final Order on Amendment 1 of the Site Certificate for Shepherds Flat Central. March 12, 2010.
- ODOE. 2018. Final Order on Request for Contested Case and Request for Amendment 5 to the Site Certificate for the Golden Hills Wind Project. October 2018.

- ODFW. 2016. ODFW Sensitive Species List. Available online at:
https://www.dfw.state.or.us/wildlife/diversity/species/docs/2017_Sensitive_Species_List.pdf. Accessed July 2019.
- ODFW (Oregon Department of Fish and Wildlife). 2018. Threatened, endangered and candidate fish and wildlife species. Available online at:
http://www.dfw.state.or.us/wildlife/diversity/species/threatened_endangered_candidate_list.asp. Accessed July 2019.
- ORBIC (Oregon Biodiversity Information Center). 2016. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 130 pp.
- OWE (Oregon Wildlife Explorer). 2019. Available online at:
<http://oe.oregonexplorer.info/wildlife/wildlifeviewer/>. Accessed July 2019.
- Renewable Resources Consultants LLC. 2009. Geotechnical Report Shepherds Flat Wind Project – Central Phase Interstate 84 and Highway 74; Gilliam County, Oregon.
- Rotenberry, J. T., M. A. Patten, and K. L. Preston. 1999. Brewer's Sparrow (*Spizella breweri*), version 2.0. In *The Birds of North America* (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
- Shannon & Wilson, Inc. 2007. Seismic Hazard Assessment: Shepherd Flat Wind Project; Arlington, OR.
- Sullivan, B.L., C.L. Wood, M.J. Iliff, R.E. Bonney, D. Fink, and S. Kelling. 2009. eBird: a citizen-based bird observation network in the biological sciences. *Biological Conservation* 142: 2282-2292.
- U.S. Census Bureau. 2010. Online Census Results. American Fact Finder. Access online July 18, 2019 at <http://factfinder.census.gov>.
- U.S. Census Bureau. 2017. American Community Survey 5-Year Estimates. Access online July 18, 2019 at <http://factfinder.census.gov>.
- USFWS (U.S. Fish and Wildlife Service). 2019. Federally Listed, Proposed, Candidate, Delisted Species and Species of Concern Under the Jurisdiction of the Fish and Wildlife Service which May Occur in Oregon. Available online at:
<https://www.fws.gov/oregonfwo/Documents/OregonSpeciesStateList.pdf>. Accessed July 2010.
- Zimmerling, J. R. and Francis, C. M. 2016. Bat mortality due to wind turbines in Canada. *Journal of Wildlife Management* 80: 1360-1369. doi:10.1002/jwmg.21128

Figures

This page intentionally left blank

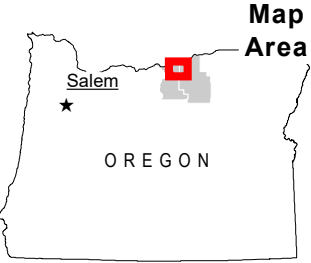
Figure 1
Facility Location



- Site Boundaries**
- Shepherds Flat Central
 - Shepherds Flat North and South
- Facilities**
- Demonstration Turbines
 - Wind Turbines
 - Met Towers
 - Substations
 - Other Substation
- Land Status**
- Bureau of Land Management
 - Military Reservation or Corps of Engineers
 - Private
 - State or Local
- Other Features**
- Water Body
 - River
 - Interstate
 - Highways
 - Other Roads
 - Railroad

Disclaimer:
Not intended for construction, or any uses other than intended purpose.

Data Source(s):
BLM, Caithness Energy, Esri, USGS



CAITHNESS

Figure 2
Demonstration Turbines



Site Boundaries

- Shepherds Flat Central (Site Boundary)
- Demonstration Turbines

Land Status

- Bureau of Land Management
- Private

Notes:
Not intended for construction, or any uses other than intended purpose.

Data Source(s):
BLM, Caithness, Esri, NAIP (2016), USGS

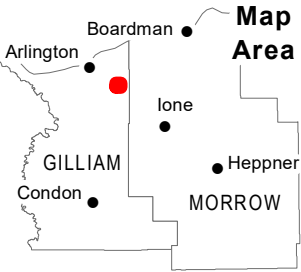
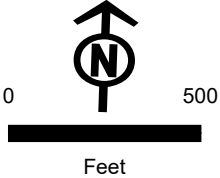
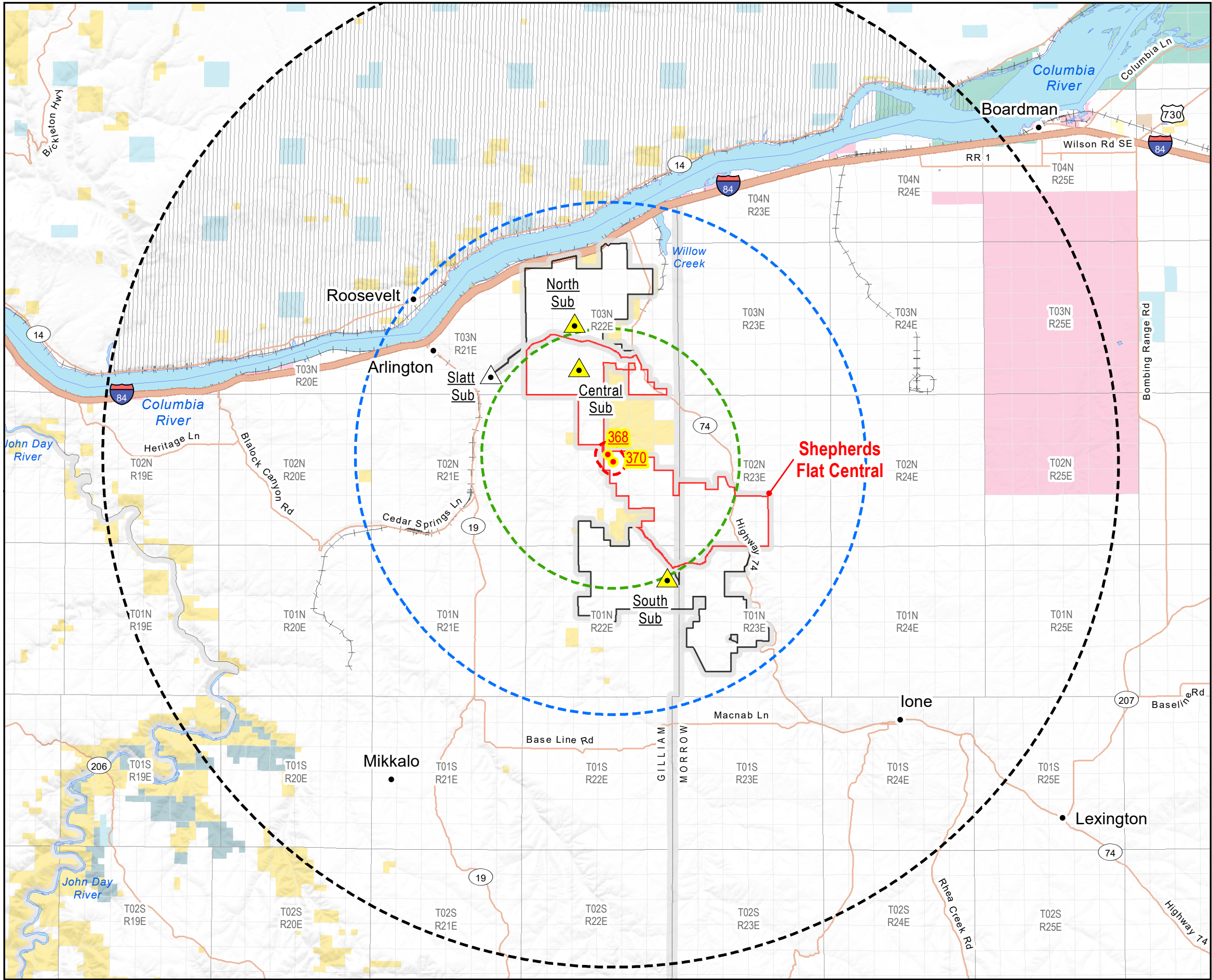


Figure 3
Analysis Areas

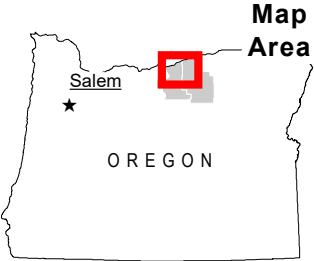
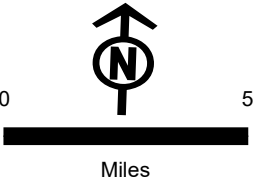


- Site Boundary**
- Shepherds Flat Central
 - Shepherds Flat North and South
- Analysis Areas (centered on Demonstration Turbines)**
- Demonstration Turbines
 - Fish and Wildlife (0.5-miles)
 - TES, Recreational Opportunities (5-miles)
 - Scenic Resources (10-miles)
 - Protected Areas (20-miles)
 - Not Included in Analysis Area (not in Oregon)

- Land Status**
- Bureau of Land Management
 - Bureau of Reclamation
 - Fish and Wildlife Service
 - Military Reservation or Corps of Engineers
 - Other Federal
 - Private
 - State or Local
 - State or Local Parks and Recreation or Wildlife
 - Water

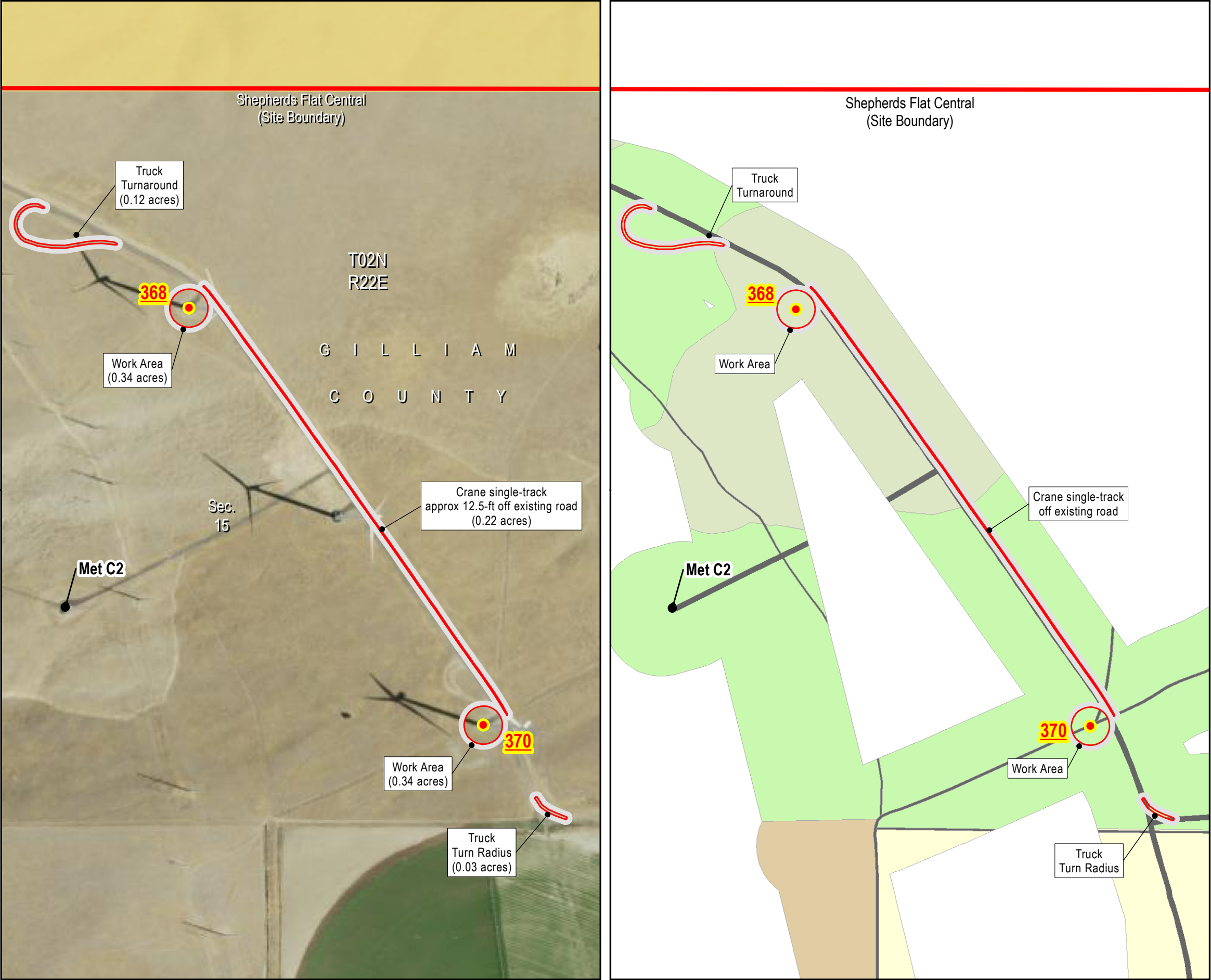
Notes:
Not intended for construction, or any uses other than intended purpose.

Data Source(s):
BLM, Caithness Energy, Esri, USGS



CAITHNESS

Figure 4
O&M Work Areas



Facility Features

Shepherds Flat Central (Site Boundary)

Demonstration Turbines

Met Tower

Land Status

Bureau of Land Management

Private

Habitat

Category 3

Grassland

Previously cultivated

Rabbitbrush steppe

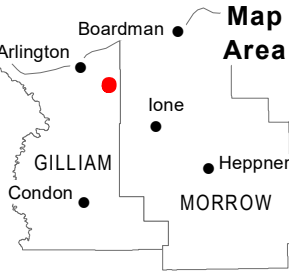
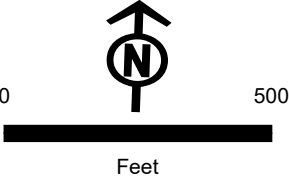
Category 6

Dryland Wheat

Roads

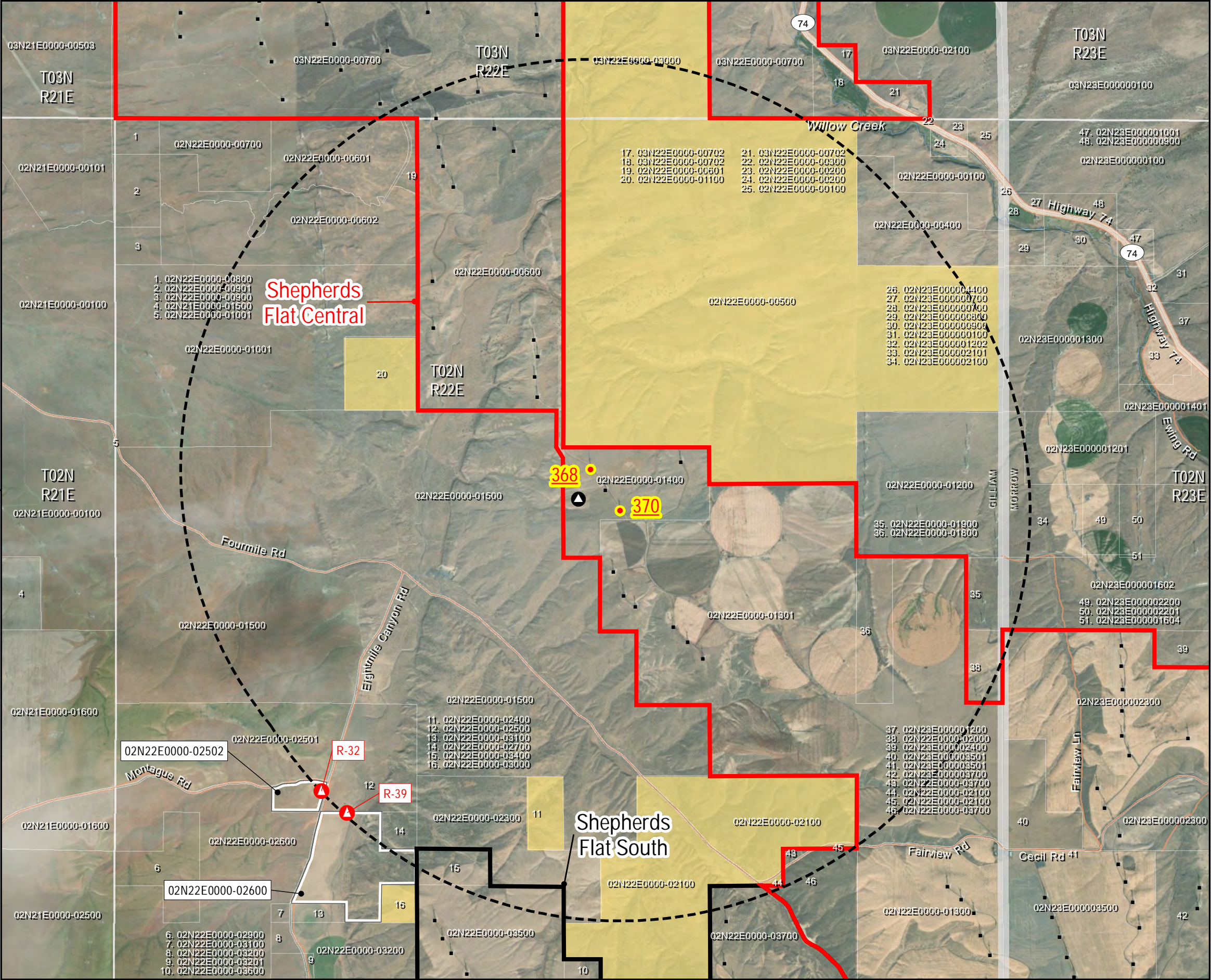
Notes:
Not intended for construction, or any uses other than intended purpose.

Data Source(s):
BLM, Caithness, Esri, NAIP (2016), USGS



CAITHNESS

Figure 5
Nearest Noise
Sensitive Receivers



Site Boundaries

- Shepherds Flat Central
- Shepherds Flat South

Facilities

- Demonstration Turbines
- Wind Turbines
- Met Towers
- Substations
- Other Substation

Noise Analysis

- Analysis Area (4.5-km buffer of Study Turbines)
- Noise Sensitive Receivers
- Parcels

Land Status

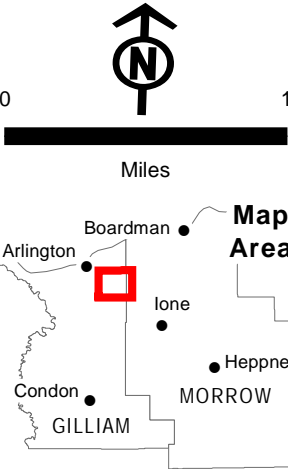
- Bureau of Land Management
- Private

Other Features

- Water Body
- River
- Interstate
- Highways
- Other Roads
- Railroad

Disclaimer:
Not intended for construction, or any uses other than intended purpose.

Data Source(s):
BLM, Calithness Energy, Esri, Gilliam County Assessor (2019), Morrow County Assessor (2019), NAIP (2016), USGS



CAITHNESS

This page intentionally left blank

Attachment 1. Red-line Site Certificate

This page intentionally left blank

**ENERGY FACILITY SITING COUNCIL
OF THE
STATE OF OREGON**

**~~First~~ ~~Second~~ Amended Site Certificate
for
Shepherds Flat Central**

~~March 12, 2010~~ October 25, 2019

The Oregon Energy Facility Siting Council
FIRST AMENDED SITE CERTIFICATE FOR SHEPHERDS FLAT CENTRAL

I. INTRODUCTION

1 The Oregon Energy Facility Siting Council (Council) issues this site certificate for the
2 Shepherds Flat Central (the facility) in the manner authorized under ORS Chapter 469. This site
3 certificate is a binding agreement between the State of Oregon (State), acting through the
4 Council, and South Hurlburt Wind, LLC (certificate holder) authorizing the certificate holder to
5 construct and operate the facility in Gilliam County and Morrow County, Oregon. [Amendment #1
6 for the Shepherds Flat Wind Farm (SFWF)]

7 The findings of fact, reasoning and conclusions of law underlying the terms and
8 conditions of this site certificate are set forth in the following documents, incorporated herein by
9 this reference: (a) the Council's *Final Order on the Application for the Shepherds Flat Wind*
10 *Farm* issued on July 25, 2008, (b) the *Final Order on Amendment #1 for the Shepherds Flat*
11 *Wind Farm*, and (c) the *Final Order on Amendment #1*. In interpreting this site certificate, any
12 ambiguity will be clarified by reference to the following, in order of priority: (1) this First
13 Amended Site Certificate, (2) the *Final Order on Amendment #1*, (3) the *Final Order on*
14 *Amendment #1 for the Shepherds Flat Wind Farm*, (4) the *Final Order on the Application for the*
15 *Shepherds Flat Wind Farm* and (5) the record of the proceedings that led to the Final Orders on
16 the Application and Amendment #1 for the Shepherds Flat Wind Farm and to the *Final Order on*
17 *Amendment #1*. [Amendment #1 (SFWF); Amendment #1]

18 [Text added by Amendment #1 (SFWF) was removed by Amendment #1].

19 The definitions in ORS 469.300 and OAR 345-001-0010 apply to terms used in this site
20 certificate, except where otherwise stated or where the context clearly indicates otherwise.

II. SITE CERTIFICATION

- 21 1. To the extent authorized by state law and subject to the conditions set forth herein, the State
22 authorizes the certificate holder to construct, operate and retire a wind energy facility,
23 together with certain related or supporting facilities, at the site in Gilliam County and
24 Morrow County, Oregon, as described in Section III of this site certificate. ORS 469.401(1).
- 25 2. This site certificate is effective until it is terminated under OAR 345-027-0110 or the rules in
26 effect on the date that termination is sought or until the site certificate is revoked under ORS
27 469.440 and OAR 345-029-0100 or the statutes and rules in effect on the date that revocation
28 is ordered. ORS 469.401(1).
- 29 3. This site certificate does not address, and is not binding with respect to, matters that were not
30 addressed in the Council's Final Orders on the Application and Amendment #1 for the
31 Shepherds Flat Wind Farm and in the *Final Order on Amendment #1*. Such matters include,
32 but are not limited to: building code compliance, wage, hour and other labor regulations,
33 local government fees and charges and other design or operational issues that do not relate to
34 siting the facility (ORS 469.401(4)) and permits issued under statutes and rules for which the
35 decision on compliance has been delegated by the federal government to a state agency other
36 than the Council. 469.503(3). [Amendment #1 (SFWF); Amendment #1]

4. Both the State and the certificate holder shall abide by local ordinances, state law and the rules of the Council in effect on the date this site certificate is executed. ORS 469.401(2). In addition, upon a clear showing of a significant threat to public health, safety or the environment that requires application of later-adopted laws or rules, the Council may require compliance with such later-adopted laws or rules. ORS 469.401(2).
5. For a permit, license or other approval addressed in and governed by this site certificate, the certificate holder shall comply with applicable state and federal laws adopted in the future to the extent that such compliance is required under the respective state agency statutes and rules. ORS 469.401(2).
6. Subject to the conditions herein, this site certificate binds the State and all counties, cities and political subdivisions in Oregon as to the approval of the site and the construction, operation and retirement of the facility as to matters that are addressed in and governed by this site certificate. ORS 469.401(3).
7. Each affected state agency, county, city and political subdivision in Oregon with authority to issue a permit, license or other approval addressed in or governed by this site certificate shall, upon submission of the proper application and payment of the proper fees, but without hearings or other proceedings, issue such permit, license or other approval subject only to conditions set forth in this site certificate. ORS 469.401(3).
8. After issuance of this site certificate, each state agency or local government agency that issues a permit, license or other approval for the facility shall continue to exercise enforcement authority over such permit, license or other approval. ORS 469.401(3).
9. After issuance of this site certificate, the Council shall have continuing authority over the site and may inspect, or direct the Oregon Department of Energy (Department) to inspect, or request another state agency or local government to inspect, the site at any time in order to ensure that the facility is being operated consistently with the terms and conditions of this site certificate. ORS 469.430.

III. DESCRIPTION

1. The Facility

(a) The Energy Facility

The energy facility is an electric power generating facility with an average electric generating capacity of up to 97 megawatts and a peak generating capacity of not more than 290 megawatts that produces power from wind energy. The facility consists of not more than 116 wind turbines. The energy facility is described further in the *Final Order on Amendment #1 for the Shepherds Flat Wind Farm* and in the *Final Order on Amendment #1*. [Amendment #1 (SFWF); Amendment #1]

(b) Related or Supporting Facilities

The facility includes the following related or supporting facilities described below and in greater detail in the *Final Order on Amendment #1 for the Shepherds Flat Wind Farm* and in the *Final Order on Amendment #1*:

- Power Collection System
- Collector Substation

- Meteorological towers
- Field workshop
- Control system
- Access roads
- Additional construction areas

[Amendment #1 (SFWF); Amendment #1]

Power Collection System

A power collection system operating at 34.5 kilovolts (kV) transports power from each turbine to a collector substation. To the extent practicable, the collection system is installed underground at a depth of at least three feet. Segments of the collector system are aboveground. Aboveground segments are installed on single-pole, cross-arm structures. [Amendment #1]

Collector Substations and Interconnection

The facility includes a collector substation. The facility includes a 230-kV transmission line between the substation and the interconnection site. The interconnection site is located at the Bonneville Power Administration Slatt Switching Station. [Amendment #1 (SFWF)]

Meteorological Towers

The facility includes two permanent meteorological (met) towers. [Amendment #1 (SFWF)]

Field Workshop

The facility includes a field workshop. Including fenced areas, the field workshop occupies about 1.6 acres. [Amendment #1 (SFWF)]

Control System

A fiber optic communications network links the control panels within each wind turbine to a host computer located in the field workshop. Supervisory, Control and Data Acquisition (SCADA) systems at the field workshop collect operating and performance data from the turbines and the facility's met towers. [Amendment #1 (SFWF)]

Access Roads

The facility includes up to 33 miles of new roads that provide access to the turbine strings. The access roads connect to graveled turbine turnouts at the base of each turbine. [Amendment #1 (SFWF); Amendment #1]

Temporary Construction Areas

During construction, the facility includes temporary laydown areas used to stage construction and store supplies and equipment. The facility includes construction crane paths to move construction cranes between turbine strings.

2. Location of the Facility

The facility is located in Morrow County and Gilliam County south of Interstate Highway 84 and east of Arlington, Oregon, between State Highways 19 and 74. The facility is located entirely on private land subject to long-term wind energy leases. [Amendment #1 (SFWF)]

IV. CONDITIONS REQUIRED BY COUNCIL RULES

This section lists conditions required by OAR 345-027-0020 (Mandatory Conditions in Site Certificates), OAR 345-027-0023 (Site Specific Conditions), OAR 345-027-0028 (Monitoring Conditions) and OAR Chapter 345, Division 26 (Construction and Operation Rules for Facilities). These conditions should be read together with the specific facility conditions listed in Section V to ensure compliance with the siting standards of OAR Chapter 345, Divisions 22 and 24, and to protect the public health and safety. In these conditions, the definitions in OAR 345-001-0010 apply.

The obligation of the certificate holder to report information to the Department or the Council under the conditions listed in this section and in Section V is subject to the provisions of ORS 192.502 *et seq.* and ORS 469.560. To the extent permitted by law, the Department and the Council will not publicly disclose information that may be exempt from public disclosure if the certificate holder has clearly labeled such information and stated the basis for the exemption at the time of submitting the information to the Department or the Council. If the Council or the Department receives a request for the disclosure of the information, the Council or the Department, as appropriate, will make a reasonable attempt to notify the certificate holder and will refer the matter to the Attorney General for a determination of whether the exemption is applicable, pursuant to ORS 192.450.

In addition to these conditions, the site certificate holder is subject to all conditions and requirements contained in the rules of the Council and in local ordinances and state law in effect on the date the certificate is executed. Under ORS 469.401(2), upon a clear showing of a significant threat to the public health, safety or the environment that requires application of later-adopted laws or rules, the Council may require compliance with such later-adopted laws or rules.

The Council recognizes that many specific tasks related to the design, construction, operation and retirement of the facility will be undertaken by the certificate holder's agents or contractors. Nevertheless, the certificate holder is responsible for ensuring compliance with all provisions of the site certificate.

1 OAR 345-027-0020(1): The Council shall not change the conditions of the site certificate except as provided for in OAR Chapter 345, Division 27.

2 OAR 345-027-0020(2): The certificate holder shall submit a legal description of the site to the Department of Energy within 90 days after beginning operation of the facility. The legal description required by this rule means a description of metes and bounds or a description of the site by reference to a map and geographic data that clearly and specifically identifies the outer boundaries that contain all parts of the facility.

3 OAR 345-027-0020(3): The certificate holder shall design, construct, operate and retire the facility:

(a) Substantially as described in the site certificate;

(b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time the site certificate is issued; and

(c) In compliance with all applicable permit requirements of other state agencies.

4 OAR 345-027-0020(4): The certificate holder shall begin and complete construction of the facility by the dates specified in the site certificate. (*See Conditions 24 and 25.*)

- 5 OAR 345-027-0020(5): Except as necessary for the initial survey or as otherwise allowed for wind energy facilities, transmission lines or pipelines under this section, the certificate holder shall not begin construction, as defined in OAR 345-001-0010, or create a clearing on any part of the site until the certificate holder has construction rights on all parts of the site. For the purpose of this rule, “construction rights” means the legal right to engage in construction activities. For wind energy facilities, transmission lines or pipelines, if the certificate holder does not have construction rights on all parts of the site, the certificate holder may nevertheless begin construction, as defined in OAR 345-001-0010, or create a clearing on a part of the site if the certificate holder has construction rights on that part of the site and:
- (a) The certificate holder would construct and operate part of the facility on that part of the site even if a change in the planned route of the transmission line or pipeline occurs during the certificate holder’s negotiations to acquire construction rights on another part of the site; or
- (b) The certificate holder would construct and operate part of a wind energy facility on that part of the site even if other parts of the facility were modified by amendment of the site certificate or were not built.
- 6 OAR 345-027-0020(6): If the Council requires mitigation based on an affirmative finding under any standards of Division 22 or Division 24 of this chapter, the certificate holder shall consult with affected state agencies and local governments designated by the Council and shall develop specific mitigation plans consistent with Council findings under the relevant standards. The certificate holder must submit the mitigation plans to the Office and receive Office approval before beginning construction or, as appropriate, operation of the facility.
- 7 OAR 345-027-0020(7): The certificate holder shall prevent the development of any conditions on the site that would preclude restoration of the site to a useful, non-hazardous condition to the extent that prevention of such site conditions is within the control of the certificate holder.
- 8 OAR 345-027-0020(8): Before beginning construction of the facility, the certificate holder shall submit to the State of Oregon, through the Council, 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. The certificate holder shall maintain a bond or letter of credit in effect at all times until the facility has been retired. The Council may specify different amounts for the bond or letter of credit during construction and during operation of the facility. (*See Condition 30.*)
- 9 OAR 345-027-0020(9): The certificate holder shall retire the facility if the certificate holder permanently ceases construction or operation of the facility. The certificate holder shall retire the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110. The certificate holder shall pay the actual cost to restore the site to a useful, non-hazardous condition at the time of retirement, notwithstanding the Council’s approval in the site certificate of an estimated amount required to restore the site.
- 10 OAR 345-027-0020(10): The Council shall include as conditions in the site certificate all representations in the site certificate application and supporting record the Council deems to be binding commitments made by the applicant.

- 11 OAR 345-027-0020(11): Upon completion of construction, the certificate holder shall restore vegetation to the extent practicable and shall landscape all areas disturbed by construction in a manner compatible with the surroundings and proposed use. Upon completion of construction, the certificate holder shall 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.
- 12 OAR 345-027-0020(12): The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable seismic events. As used in this rule “seismic hazard” includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement and subsidence.
- 13 OAR 345-027-0020(13): The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if site investigations or trenching reveal that conditions in the foundation rocks differ significantly from those described in the application for a site certificate. After the Department receives the notice, the Council may require the certificate holder to consult with the Department of Geology and Mineral Industries and the Building Codes Division and to propose mitigation actions.
- 14 OAR 345-027-0020(14): The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if shear zones, artesian aquifers, deformations or clastic dikes are found at or in the vicinity of the site.
- 15 OAR 345-027-0020(15): Before any transfer of ownership of the facility or ownership of the site certificate holder, the certificate holder shall inform the Department of the proposed new owners. The requirements of OAR 345-027-0100 apply to any transfer of ownership that requires a transfer of the site certificate.
- 16 OAR 345-027-0020(16): If the Council finds that the certificate holder has permanently ceased construction or operation of the facility without retiring the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110, the Council shall notify the certificate holder and request that the certificate holder submit a proposed final retirement plan to the Office within a reasonable time not to exceed 90 days. If the certificate holder does not submit a proposed final retirement plan by the specified date, the Council may direct the Department to prepare a proposed final retirement plan for the Council’s approval. Upon the Council’s approval of the final retirement plan, the Council may draw on the bond or letter of credit described in OAR 345-027-0020(8) to restore the site to a useful, non-hazardous condition according to the final retirement plan, in addition to any penalties the Council may impose under OAR Chapter 345, Division 29. If the amount of the bond or letter of credit is insufficient to pay the actual cost of retirement, the certificate holder shall pay any additional cost necessary to restore the site to a useful, non-hazardous condition. After completion of site restoration, the Council shall issue an order to terminate the site certificate if the Council finds that the facility has been retired according to the approved final retirement plan.

- 17 OAR 345-027-0023(4): If the facility includes any transmission line under Council jurisdiction:
- (a) The certificate holder shall design, construct and operate the transmission line in accordance with the requirements of the National Electrical Safety Code (American National Standards Institute, Section C2, 1997 Edition); and
- (b) The certificate holder shall develop and implement a program that provides reasonable assurance that all fences, gates, cattle guards, trailers, or other objects or structures of a permanent nature that could become inadvertently charged with electricity are grounded or bonded throughout the life of the line.
- 18 OAR 345-027-0023(5): If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a pipeline or transmission line, the Council shall specify an approved corridor in the site certificate and shall allow the certificate holder to construct the pipeline or transmission line anywhere within the corridor, subject to the conditions of the site certificate. If the applicant has analyzed more than one corridor in its application for a site certificate, the Council may, subject to the Council's standards, approve more than one corridor.
- 19 OAR 345-027-0028: The following general monitoring conditions apply:
- (a) The certificate holder shall consult with affected state agencies, local governments and tribes and shall develop specific monitoring programs for impacts to resources protected by the standards of divisions 22 and 24 of OAR Chapter 345 and resources addressed by applicable statutes, administrative rules and local ordinances. The certificate holder must submit the monitoring programs to the Department of Energy and receive Department approval before beginning construction or, as appropriate, operation of the facility.
- (b) The certificate holder shall implement the approved monitoring programs described in OAR 345-027-0028(1) and monitoring programs required by permitting agencies and local governments.
- (c) For each monitoring program described in OAR 345-027-0028(1) and (2), the certificate holder shall have quality assurance measures approved by the Department before beginning construction or, as appropriate, before beginning commercial operation.
- (d) If the certificate holder becomes aware of a significant environmental change or impact attributable to the facility, the certificate holder shall, as soon as possible, submit a written report to the Department describing the impact on the facility and any affected site certificate conditions.
- 20 OAR 345-026-0048: Following receipt of the site certificate or an amended site certificate, the certificate holder shall implement a plan that verifies compliance with all site certificate terms and conditions and applicable statutes and rules. As a part of the compliance plan, to verify compliance with the requirement to begin construction by the date specified in the site certificate, the certificate holder shall report promptly to the Department of Energy when construction begins. Construction is defined in OAR 345-001-0010. In reporting the beginning of construction, the certificate holder shall describe all work on the site performed before beginning construction, including work performed before the Council issued the site certificate, and shall state 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. The certificate

holder shall document the compliance plan and maintain it for inspection by the Department or the Council.

21 OAR 345-026-0080: The certificate holder shall report according to the following requirements:

(a) General reporting obligation for energy facilities under construction or operating:

(i) Within six months after beginning construction, and every six months thereafter during construction of the energy facility and related or supporting facilities, the certificate holder shall submit a semiannual construction progress report to the Department of Energy. In each construction progress report, the certificate holder shall describe any significant changes to major milestones for construction. The certificate holder shall include such information related to construction as specified in the site certificate. When the reporting date coincides, the certificate holder may include the construction progress report within the annual report described in OAR 345-026-0080.

(ii) By April 30 of each year after beginning construction, the certificate holder shall submit an annual report to the Department addressing the subjects listed in OAR 345-026-0080. The Council Secretary and the certificate holder may, by mutual agreement, change the reporting date.

(iii) To the extent that information required by OAR 345-026-0080 is contained in reports the certificate holder submits to other state, federal or local agencies, the certificate holder may submit excerpts from such other reports to satisfy this rule. The Council reserves the right to request full copies of such excerpted reports.

(b) In the annual report, the certificate holder shall include the following information for the calendar year preceding the date of the report:

(i) Facility Status: An overview of site conditions, the status of facilities under construction, and a summary of the operating experience of facilities that are in operation. In this section of the annual report, the certificate holder shall describe any unusual events, such as earthquakes, extraordinary windstorms, major accidents or the like that occurred during the year and that had a significant adverse impact on the facility.

(ii) Reliability and Efficiency of Power Production: For electric power plants, the plant availability and capacity factors for the reporting year. The certificate holder shall describe any equipment failures or plant breakdowns that had a significant impact on those factors and shall describe any actions taken to prevent the recurrence of such problems.

(iii) Fuel Use: For thermal power plants:

(A) The efficiency with which the power plant converts fuel into electric energy. If the fuel chargeable to power heat rate was evaluated when the facility was sited, the certificate holder shall calculate efficiency using the same formula and assumptions, but using actual data; and

(B) The facility's annual hours of operation by fuel type and, every five years after beginning operation, a summary of the annual hours of operation by fuel type as described in OAR 345-024-0590(5).

(iv) Status of Surety Information: Documentation demonstrating that bonds or letters of credit as described in the site certificate are in full force and effect and will remain in full force and effect for the term of the next reporting period.

(v) Monitoring Report: A list and description of all significant monitoring and mitigation activities performed during the previous year in accordance with site certificate terms and conditions, a summary of the results of those activities and a discussion of any

significant changes to any monitoring or mitigation program, including the reason for any such changes.

(vi) Compliance Report: A description of all instances of noncompliance with a site certificate condition. For ease of review, the certificate holder shall, in this section of the report, use numbered subparagraphs corresponding to the applicable sections of the site certificate.

(vii) Facility Modification Report: A summary of changes to the facility that the certificate holder has determined do not require a site certificate amendment in accordance with OAR 345-027-0050.

(viii) Nongenerating Facility Carbon Dioxide Emissions: For nongenerating facilities that emit carbon dioxide, a report of the annual fuel use by fuel type and annual hours of operation of the carbon dioxide emitting equipment as described in OAR 345-024-0630(4).

22 OAR 345-026-0105: The certificate holder and the Department of Energy shall exchange copies of all correspondence or summaries of correspondence related to compliance with statutes, rules and local ordinances on which the Council determined compliance, except for material withheld from public disclosure under state or federal law or under Council rules. The certificate holder may submit abstracts of reports in place of full reports; however, the certificate holder shall provide full copies of abstracted reports and any summarized correspondence at the request of the Department.

23 OAR 345-026-0170: The certificate holder shall notify the Department of Energy within 72 hours of any occurrence involving the facility if:

(a) There is an attempt by anyone to interfere with its safe operation;

(b) A natural event such as an earthquake, flood, tsunami or tornado, or a human-caused event such as a fire or explosion affects or threatens to affect the public health and safety or the environment; or

(c) There is any fatal injury at the facility.

V. SPECIFIC FACILITY CONDITIONS

The conditions listed in this section include conditions based on representations in the site certificate application and supporting record. These conditions are required under OAR 345-027-0020(10). The certificate holder must comply with these conditions in addition to the conditions listed in Section VI. This section includes other specific facility conditions the Council finds necessary to ensure compliance with the siting standards of OAR Chapter 345, Divisions 22 and 24, and to protect the public health and safety. For conditions that require subsequent review and approval of a future action, ORS 469.402 authorizes the Council to delegate the future review and approval to the Department if, in the Council's discretion, the delegation is warranted under the circumstances of the case.

1. Certificate Administration Conditions

24 The certificate holder shall begin construction of the facility by July 25, 2011. The Council may grant an extension of the deadline to begin construction in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted. [Amendment #1 (SFWF)]

25 The certificate holder shall complete construction of the facility by July 25, 2014. Construction is complete when: 1) the facility is substantially complete as defined by the

1 certificate holder's construction contract documents, 2) acceptance testing has been
2 satisfactorily completed and 3) the energy facility is ready to begin continuous operation
3 consistent with the site certificate. The certificate holder shall promptly notify the
4 Department of the date of completion of construction. The Council may grant an extension
5 of the deadline for completing construction in accordance with OAR 345-027-0030 or any
6 successor rule in effect at the time the request for extension is submitted. [Amendment #1
7 (SFWF)]

8 26 The certificate holder shall construct a facility substantially as described in the site
9 certificate and may select turbines of any type, subject to the following restrictions and
10 compliance with all other site certificate conditions. Before beginning construction, the
11 certificate holder shall provide to the Department a description of the turbine types selected
12 for the facility demonstrating compliance with this condition.

13 (a) The total number of turbines at the facility must not exceed 116 turbines.

14 (b) The combined peak generating capacity of the facility must not exceed 290
15 megawatts.

16 (c) The turbine hub height must not exceed 105 meters and the maximum blade tip height
17 must not exceed 150 meters.

18 (d) The minimum blade tip clearance must be 25 meters above ground- *with the exception*
19 *of turbine number 368 and turbine number 370 for which the minimum blade tip clearance*
20 *must be 21.5 meters above ground.*

21 (e) The maximum volume of concrete above three feet below grade in the turbine
22 foundations must not exceed 66 cubic yards.

23 (f) The maximum combined weight of metals in the tower (including ladders and
24 platforms) and nacelle must not exceed 393 U.S. tons per turbine.

25 (g) The certificate holder shall request an amendment of the site certificate to increase the
26 combined peak generating capacity of the facility beyond 290 megawatts, to increase the
27 number of wind turbines to more than 116 wind turbines or to install wind turbines with a
28 hub height greater than 105 meters, a blade tip height greater than 150 meters or a blade tip
29 clearance less than 25 meters above ground.

30 *(h) The Certificate Holder shall exchange blades and associated mechanical equipment*
31 *for turbines 368 and 370 during operation of the Facility; in conjunction with routine*
32 *operations and maintenance activities.*
33

34 [Amendment #1 (SFWF); Amendment #1; **Amendment #2**]

35 27 The certificate holder shall obtain all necessary federal, state and local permits or approvals
36 required for construction, operation and retirement of the facility or ensure that its
37 contractors obtain the necessary federal, state and local permits or approvals.

38 28 Before beginning construction, the certificate holder shall notify the Department in advance
39 of any work on the site that does not meet the definition of "construction" in ORS 469.300,
40 excluding surveying, exploration or other activities to define or characterize the site, and
41 shall provide to the Department a description of the work and evidence that its value is less
42 than \$250,000.

43 29 Before beginning construction and after considering all micro-siting factors, the certificate
44 holder shall provide to the Department, to the Oregon Department of Fish and Wildlife
45 (ODFW) and to the Planning Directors of Morrow County and Gilliam County detailed

1 maps of the facility site, showing the final locations where the certificate holder proposes to
2 build facility components, and a table showing the acres of temporary and permanent
3 habitat impact by habitat category and subtype, similar to Table 9 in the Final Order on
4 Amendment #1 for the Shepherds Flat Wind Farm. The detailed maps of the facility site
5 shall indicate the habitat categories of all areas that would be affected during construction
6 (similar to the maps labeled "ODFW-2" in the site certificate application for the Shepherds
7 Flat Wind Farm). In classifying the affected habitat into habitat categories, the certificate
8 holder shall consult with the ODFW. The certificate holder shall not begin ground
9 disturbance in an affected area until the habitat assessment has been approved by the
10 Department. The Department may employ a qualified contractor to confirm the habitat
11 assessment by on-site inspection. [Amendment #1 (SFWF)]

12 30 Before beginning construction, the certificate holder shall submit to the State of Oregon
13 through the Council a bond or letter of credit in the amount described herein naming the
14 State of Oregon, acting by and through the Council, as beneficiary or payee. The initial
15 bond or letter of credit amount is either \$9.076 million (1st Quarter 2010 dollars), to be
16 adjusted to the date of issuance as described in (b), or the amount determined as described
17 in (a). The certificate holder shall adjust the amount of the bond or letter of credit on an
18 annual basis thereafter as described in (b).

19 (a) The certificate holder may adjust the amount of the bond or letter of credit based on
20 the final design configuration of the facility and turbine types selected by applying the unit
21 costs and general costs illustrated in Table 2 in the Final Order on the Amendment #1 for
22 the Shepherds Flat Wind Farm and calculating the financial assurance amount as described
23 in that order, adjusted to the date of issuance as described in (b) and subject to approval by
24 the Department.

25 (b) The certificate holder shall adjust the amount of the bond or letter of credit, using the
26 following calculation and subject to approval by the Department:

27 (i) Adjust the Subtotal component of the bond or letter of credit amount (expressed in
28 3rd Quarter 2009 dollars) to present value, using the U.S. Gross Domestic Product Implicit
29 Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative
30 Services' "Oregon Economic and Revenue Forecast" or by any successor agency (the
31 "Index") and using the index value for 3rd Quarter 2009 dollars and the quarterly index
32 value for the date of issuance of the new bond or letter of credit. If at any time the Index is
33 no longer published, the Council shall select a comparable calculation to adjust 3rd Quarter
34 2009 dollars to present value.

35 (ii) Add 1 percent of the adjusted Subtotal (i) for the adjusted performance bond
36 amount to determine the adjusted Gross Cost.

37 (iii) Add 10 percent of the adjusted Gross Cost (ii) for the adjusted administration and
38 project management costs and 10 percent of the adjusted Gross Cost (ii) for the adjusted
39 future developments contingency.

40 (iv) Add the adjusted Gross Cost (ii) to the sum of the percentages (iii) and round the
41 resulting total to the nearest \$1,000 to determine the adjusted financial assurance amount.

42 (c) The certificate holder shall use a form of bond or letter of credit approved by the
43 Council.

44 (d) The certificate holder shall use an issuer of the bond or letter of credit approved by
45 the Council.

(e) The certificate holder shall describe the status of the bond or letter of credit in the annual report submitted to the Council under Condition 21.

(f) The bond or letter of credit shall not be subject to revocation or reduction before retirement of the facility site.

[Amendment #1 (SFWF); Amendment #1]

31 If the certificate holder elects to use a bond to meet the requirements of Condition 30, the certificate holder shall ensure that the surety is obligated to comply with the requirements of applicable statutes, Council rules and this site certificate when the surety exercises any legal or contractual right it may have to assume construction, operation or retirement of the energy facility. The certificate holder shall also ensure that the surety is obligated to notify the Council that it is exercising such rights and to obtain any Council approvals required by applicable statutes, Council rules and this site certificate before the surety commences any activity to complete construction, operate or retire the energy facility.

32 Before beginning construction, the certificate holder shall notify the Department of the identity and qualifications of the major design, engineering and construction contractor(s) for the facility. The certificate holder shall select contractors that have substantial experience in the design, engineering and construction of similar facilities. The certificate holder shall report to the Department any change of major contractors.

33 The certificate holder shall contractually require all construction contractors and subcontractors involved in the construction of the facility to comply with all applicable laws and regulations and with the terms and conditions of the site certificate. Such contractual provisions shall not operate to relieve the certificate holder of responsibility under the site certificate.

34 During construction, the certificate holder shall have a full-time, on-site assistant construction manager who is qualified in environmental compliance to ensure compliance with all site certificate conditions. The certificate holder shall notify the Department of the name, telephone number and e-mail address of this person.

35 Within 72 hours after discovery of conditions or circumstances that may violate the terms or conditions of the site certificate, the certificate holder shall report the conditions or circumstances to the Department.

2. Land Use Conditions

36 The certificate holder shall consult with area landowners and lessees during construction and operation of the facility and shall implement measures to reduce or avoid any adverse impacts to farm practices on surrounding lands and to avoid any increase in farming costs.

37 The certificate holder shall design and construct the facility using the minimum land area necessary for safe construction and operation. The certificate holder shall locate access roads and temporary construction laydown and staging areas to minimize disturbance with farming practices and, wherever feasible, shall place turbines and transmission interconnection lines along the margins of cultivated areas to reduce the potential for conflict with farm operations.

38 During construction and operation of the facility, the certificate holder shall implement a plan to control the introduction and spread of noxious weeds. The certificate shall develop

the weed control plan consistent with the Gilliam County and Morrow County Weed Control Programs.

39 Before beginning construction of the facility, the certificate holder shall record in the real property records of Gilliam County a Covenant Not to Sue with regard to generally accepted farming practices on adjacent farmland consistent with Gilliam County Zoning Ordinance 7.020(T)(4)(a)(5).

40 The certificate holder shall construct all facility components in compliance with the following setback requirements:

(a) All facility components must be at least 3,520 feet from the property line of properties zoned residential use or designated in the Gilliam County Comprehensive Plan as residential.

(b) Where (a) does not apply, the certificate holder shall maintain a minimum distance of 110-percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest edge of any public road right-of-way. The certificate holder shall assume a minimum right-of-way width of 60 feet.

(c) Where (a) does not apply, the certificate holder shall maintain a minimum distance of 1,320 feet, measured from the centerline of the turbine tower to the center of the nearest residence existing at the time of tower construction.

(d) Where (a) does not apply, the certificate holder shall maintain a minimum distance of 110-percent of maximum blade tip height, measured from the centerline of the turbine tower to the nearest boundary of the certificate holder's lease area, except as provided in (e).

(e) The turbine tower setback distance described in (d) does not apply to the two isolated areas excluded from the certificate holder's lease with the landowner identified as "Area A" and "Area B" in the *Final Order on Amendment #1*.

[Amendment #1]

41 Within 90 days after beginning operation, the certificate holder shall provide to the Department and to the Planning Directors of Gilliam County and Morrow County the actual latitude and longitude location or Stateplane NAD 83(91) coordinates of each turbine tower, connecting lines and transmission lines. In addition, the certificate holder shall provide to the Department and to the Planning Directors of Gilliam County and Morrow County, a summary of as-built changes in the facility compared to the original plan, if any.

42 The certificate holder shall install gates on all private facility access roads in Gilliam County, in accordance with Gilliam County Zoning Ordinance Section 7.020(T)(4)(d)(6).

3. Cultural Resource Conditions

43 Before beginning construction, the certificate holder shall provide to the Department a map showing the final design locations of all components of the facility and areas that would be temporarily disturbed during construction. In addition, the certificate holder shall comply with the following requirements:

(a) The certificate holder shall avoid disturbance within a 30-meter buffer around the prehistoric archaeological sites and historic-period archaeological sites within the facility boundary identified by AINW as "possibly eligible" for listing in the National Register of

1 Historic Places (NRHP) as described in the Final Order on the Application for the
2 Shepherds Flat Wind Farm.

3 (b) The certificate holder shall avoid disturbance of the stacked rock features within the
4 facility boundary identified by AINW as “possibly eligible” for listing in the NRHP as
5 described in the Final Order on the Application for the Shepherds Flat Wind Farm and
6 shall, to the extent practicable, maintain a 30-meter no-construction buffer around these
7 features. If a 30-meter buffer cannot be maintained, the certificate holder shall consult with
8 the State Historic Preservation Office (SHPO) and the Department to determine appropriate
9 action to preserve or document the feature.

10 (c) The certificate holder shall label “no entry” areas around all identified historic,
11 cultural or archaeological resource sites on construction maps and drawings, and if
12 construction activities will occur within 200 feet of an identified site, the certificate holder
13 shall flag a 30-meter buffer around the site.

14 (d) The certificate holder shall hire qualified personnel to conduct pre-construction field
15 investigation for historic, cultural or archaeological resources in any areas of potential
16 construction disturbance that AINW did not previously survey.

17 (e) The certificate holder shall provide written reports of the field investigation required
18 under (d) to the Department and to the SHPO. If any historic, cultural or archaeological
19 resources are found that the SHPO determines to be significant, the certificate holder shall
20 consult with the Department and the SHPO to develop plan to avoid disturbance of the
21 resources during construction and operation of the facility. The certificate holder shall
22 instruct all construction personnel to avoid areas where the resources were found and shall
23 implement other appropriate measures to protect the resources.

24 [Amendment #1 (SFWF)]

25 44 The certificate holder shall ensure that a qualified archeologist, as defined in OAR 736-051-
26 0070, instructs construction personnel in the identification of cultural materials and
27 avoidance of accidental damage to identified resource sites.

28 45 The certificate holder shall ensure that construction personnel cease all ground-disturbing
29 activities in the immediate area if any archaeological or cultural resources are found during
30 construction of the facility until a qualified archeologist can evaluate the significance of the
31 find. The certificate holder shall notify the Department and the State Historic Preservation
32 Office (SHPO) of the find. If the SHPO determines that the resource is significant, the
33 certificate holder shall make recommendations to the Council for mitigation, including
34 avoidance, field documentation and data recovery, in consultation with the Department,
35 SHPO, interested tribes and other appropriate parties. The certificate holder shall not restart
36 work in the affected area until the certificate holder has demonstrated to the Department
37 and the SHPO that it has complied with archaeological resource protection regulations.

38 46 In reference to the presumed alignments of the Oregon Trail described in the Final Order on
39 the Application, the certificate holder shall comply with the following requirements:

40 (a) The certificate holder shall not locate facility components on visible remnants of the
41 Oregon Trail and shall avoid any construction disturbance to those remnants.

42 (b) The certificate holder shall not locate facility components on undeveloped land where
43 the trail alignment was marked by existing Oregon-California Trail Association markers as
44 described in the October 2007 Archaeological Investigations Northwest, Inc. report (No.
45 2012) on the Oregon Trail.

1 (c) Before beginning construction, the certificate holder shall provide to the State Historic
2 Preservation Office (SHPO) and to the Department photographic documentation of the
3 presumed Oregon Trail alignments within the site boundary.

4 (d) The certificate holder shall ensure that construction personnel proceed carefully in the
5 vicinity of the presumed alignments of the Oregon Trail. If any intact physical evidence of
6 the trail is discovered, the certificate holder shall avoid any disturbance to the intact
7 segments, by redesign, re-engineering or restricting the area of construction activity. The
8 certificate holder shall promptly notify the SHPO and the Department of the discovery. The
9 certificate holder shall consult with the SHPO and the Department to determine appropriate
10 mitigation measures.

4. Geotechnical Conditions

11 47 Before beginning construction, the certificate holder shall conduct a site-specific
12 geotechnical investigation and shall report its findings to the Oregon Department of
13 Geology & Mineral Industries (DOGAMI) and the Department. The certificate holder shall
14 conduct the geotechnical investigation after consultation with DOGAMI and in general
15 accordance with DOGAMI open file report 00-04 "Guidelines for Engineering Geologic
16 Reports and Site-Specific Seismic Hazard Reports."

17 48 The certificate holder shall design and construct the facility in accordance with
18 requirements set forth by the State of Oregon's Building Code Division and any other
19 applicable codes and design procedures. The certificate holder shall design facility
20 structures to meet or exceed the minimum standards required by the 2003 International
21 Building Code.

22 49 The certificate holder shall design, engineer and construct the facility to avoid dangers to
23 human safety presented by non-seismic hazards. As used in this condition, "non-seismic
24 hazards" include settlement, landslides, flooding and erosion.

5. Hazardous Materials, Fire Protection & Public Safety Conditions

25 50 The certificate holder shall handle hazardous materials used on the site in a manner that
26 protects public health, safety and the environment and shall comply with all applicable
27 local, state and federal environmental laws and regulations. The certificate holder shall not
28 store diesel fuel or gasoline on the facility site.

29 51 If a spill or release of hazardous material occurs during construction or operation of the
30 facility, the certificate holder shall notify the Department within 72 hours and shall clean up
31 the spill or release and dispose of any contaminated soil or other materials according to
32 applicable regulations. The certificate holder shall make sure that spill kits containing items
33 such as absorbent pads are located on equipment and at the field workshop. The certificate
34 holder shall instruct employees about proper handling, storage and cleanup of hazardous
35 materials. [Amendment #1 (SFWF)]

36 52 During construction, the certificate holder shall ensure that construction personnel are
37 trained in fire prevention and response, that construction vehicles and equipment are
38 operated on graveled areas to the extent possible and that open flames, such as cutting
39 torches, are kept away from dry grass areas.

- 1 53 During operation, the certificate holder shall ensure that all on-site employees receive
2 annual fire prevention and response training, including tower rescue training, by qualified
3 instructors or members of the local fire districts. The certificate holder shall ensure that all
4 employees are instructed to keep vehicles on roads and off dry grassland, except when off-
5 road operation is required for emergency purposes. The certificate holder shall encourage
6 employees to become volunteer members of local fire departments and shall facilitate
7 appropriate training.
- 8 54 During construction and operation of the facility, the certificate holder shall ensure that the
9 field workshop and all service vehicles are equipped with shovels and portable fire
10 extinguishers of a 4A5OBC or equivalent rating. [Amendment #1 (SFWF)]
- 11 55 During construction and operation of the facility, the certificate holder shall develop and
12 implement fire safety plans in consultation with the local fire protection agencies (the North
13 Gilliam County Rural Fire Protection District and the Ione Rural Fire Protection District) to
14 minimize the risk of fire and to respond appropriately to any fires that occur on the facility
15 site. In developing the fire safety plans, the certificate holder shall take into account the dry
16 nature of the region and shall address risks on a seasonal basis. The certificate holder shall
17 meet annually with local fire protection agency personnel to discuss emergency planning
18 and shall invite local fire protection agency personnel to observe any emergency drill or
19 tower rescue training conducted at the facility.
- 20 56 Upon the beginning of operation of the facility, the certificate holder shall provide a site
21 plan to the local fire protection agencies (the North Gilliam County Rural Fire Protection
22 District and the Ione Rural Fire Protection District). The certificate holder shall indicate on
23 the site plan the identification number assigned to each turbine and the location of all
24 facility structures and shall provide an updated site plan if additional turbines or other
25 structures are later added to the facility. During operation, the certificate holder shall ensure
26 that appropriate fire protection agency personnel have an up-to-date list of the names and
27 telephone numbers of facility personnel available to respond on a 24-hour basis in case of
28 an emergency on the facility site.
- 29 57 Before beginning construction, the certificate holder shall submit a Notice of Proposed
30 Construction or Alteration to the Federal Aviation Administration (FAA) and the Oregon
31 Department of Aviation identifying the proposed final locations of turbine towers and
32 meteorological towers. The certificate holder shall promptly notify the Department of the
33 responses from the FAA and the Oregon Department of Aviation. [Amendment #1 (SFWF)]
- 34 58 The certificate holder shall construct turbines on concrete foundations and shall surround
35 the base of each tower with a ten-foot pad area of washed crushed rock on all sides. The
36 certificate holder shall cover turbine pad areas with non-erosive, non-flammable material as
37 soon as possible following exposure during construction and shall maintain the pad area
38 covering during operation of the facility.
- 39 59 The certificate holder shall follow manufacturers' recommended handling instructions and
40 procedures to prevent damage to turbine or turbine tower components that could lead to
41 failure.
- 42 60 The certificate holder shall install and maintain self-monitoring devices on each turbine,
43 connected to a fault annunciation panel or supervisory control and data acquisition

(SCADA) system at the field workshop to alert operators to potentially dangerous conditions. The certificate holder shall maintain automatic equipment protection features in each turbine that would shut down the turbine and reduce the chance of a mechanical problem causing a fire. [Amendment #1 (SFWF)]

61 The certificate holder shall construct turbine towers with no exterior ladders or access to the turbine blades and shall install locked tower access doors. The certificate holder shall keep tower access doors locked at all times except when authorized personnel are present.

62 The certificate holder shall have an operational safety-monitoring program and shall inspect all turbine and turbine tower components on a regular basis. The certificate holder shall maintain or repair turbine and turbine tower components as necessary to protect public safety.

63 For turbine types having pad-mounted step-up transformers, the certificate holder shall install the transformers at the base of each tower in locked cabinets designed to protect the public from electrical hazards and to avoid creation of artificial habitat for raptor prey.

64 To protect the public from electrical hazards, the certificate holder shall enclose the facility substation with appropriate fencing and locked gates. [Amendment #1 (SFWF)]

65 The certificate holder shall construct access roads with a finished width of approximately 16 feet, a compacted base of native soil and a gravel surface to a depth of four to ten inches. [Amendment #1 (SFWF); Amendment #1]

66 During construction, the certificate holder shall implement measures to reduce traffic impacts, including:

(a) Providing notice to the City of Arlington Road Department, the Gilliam County Road Department and the Gilliam County Sheriff's Office in advance of deliveries that could cause traffic disruption in Arlington.

(b) Providing notice to the residents of Arlington in advance of deliveries that could cause traffic disruption.

(c) Requiring flaggers to be at appropriate locations at appropriate times during construction to direct traffic.

67 The certificate holder shall cooperate with the Gilliam County Road Department and the Morrow County Public Works Department to ensure that any unusual damage or wear to county roads that is caused by construction of the facility is repaired by the certificate holder. Upon completion of construction, the certificate holder shall restore county roads to pre-construction condition or better, to the satisfaction of the applicable county departments. If required by Morrow County or Gilliam County, the certificate holder shall post bonds to ensure funds are available to repair and maintain roads affected by the proposed facility.

68 During construction, the certificate holder shall require that all on-site construction contractors develop and implement a site health and safety plan that informs workers and others on-site what to do in case of an emergency and that includes the locations of fire extinguishers and nearby hospitals, important telephone numbers and first aid techniques. The certificate holder shall ensure that construction contractors have personnel on-site who are trained and equipped for tower rescue and who are first aid and CPR certified.

1 69 During operation, the certificate holder shall develop and implement a site health and safety
2 plan that informs employees and others on-site what to do in case of an emergency and that
3 includes the locations of fire extinguishers and nearby hospitals, important telephone
4 numbers and first aid techniques.

5 70 During construction and operation of the facility, the certificate holder shall provide for on-
6 site security and shall establish good communications between on-site security personnel
7 and local law enforcement agencies (Gilliam County Sheriff and Morrow County Sheriff).
8 During operation, the certificate holder shall ensure that appropriate law enforcement
9 agency personnel have an up-to-date list of the names and telephone numbers of facility
10 personnel available to respond on a 24-hour basis in case of an emergency on the facility
11 site.

12 71 The certificate holder shall notify the Department and the Planning Directors of Gilliam
13 County and Morrow County within 72 hours of any accidents including mechanical failures
14 on the site associated with construction or operation of the facility that may result in public
15 health and safety concerns.

6. Water, Soils, Streams & Wetlands Conditions

16 72 The certificate holder shall not build any roads or construct transmission line support poles
17 within Eightmile Creek or within a 10-foot buffer from the ordinary high water line of the
18 creek.

19 73 The certificate holder shall conduct all construction work in compliance with an Erosion
20 and Sediment Control Plan (ESCP) satisfactory to the Oregon Department of
21 Environmental Quality and as required under the National Pollutant Discharge Elimination
22 System (NPDES) Storm Water Discharge General Permit #1200-C. The certificate holder
23 shall include in the ESCP any procedures necessary to meet local erosion and sediment
24 control requirements or storm water management requirements.

25 74 During construction, the certificate holder shall limit truck traffic to designated existing and
26 improved road surfaces to avoid soil compaction, to the extent practicable.

27 75 During construction, the certificate holder shall implement best management practices to
28 control any dust generated by construction activities, such as applying water to roads and
29 disturbed soil areas.

30 76 During construction, the certificate holder shall reduce temporary disturbance impacts by
31 making use of previously disturbed areas, including roadways and tracks, and by preserving
32 vegetation rootstalks by crushing, rather than scraping, vegetation in areas of temporary
33 disturbance.

34 77 During facility operation, the certificate holder shall routinely inspect and maintain all
35 roads, pads and trenched areas and, as necessary, maintain or repair erosion and sediment
36 control measures. The certificate holder shall restore areas that are temporarily disturbed
37 during facility maintenance or repair activities to pre-disturbance condition or better.

38 78 During facility operation, the certificate holder shall obtain water for on-site uses from a
39 well at the field workshop, subject to compliance with applicable permit requirements. The
40 certificate holder shall not use more than 5,000 gallons of water per day from the facility's
41 on-site well. [Amendment #1 (SFWF)]

7. Transmission Line & EMF Conditions

79 The certificate holder shall install the 34.5-kV collector system underground to the extent practicable. The certificate holder shall install underground lines at a minimum depth of three feet. Based on geotechnical conditions or other engineering considerations, the certificate holder may install segments of the collector system aboveground on single-pole, cross-arm structures, but the total length of aboveground double-circuit segments must not exceed 9 miles and the total length of aboveground single-circuit segments must not exceed 6 miles. [Amendment #1 (SFWF); Amendment #1]

80 The certificate holder shall ground appropriate sections of fencing that parallel transmission lines to reduce the risk of shock from induced voltage. In particular, the certificate holder shall ground appropriate sections of fencing located in the northern project area on the west side of Eightmile Canyon if the certificate holder builds a parallel transmission line in that location that could induce a voltage on the fence.

81 The certificate holder shall take reasonable steps to reduce or manage human exposure to electromagnetic fields, including but not limited to:

(a) Constructing all aboveground transmission lines at least 200 feet from any residence or other occupied structure, measured from the centerline of the transmission line.

(b) Constructing all aboveground 34.5-kV transmission lines with a minimum clearance of 20 feet from the ground.

(c) Constructing all aboveground 230-kV transmission lines with a minimum clearance of 24 feet from the ground.

(d) Fencing the areas near the facility substation to ensure that substation equipment is not accessible to the public.

(e) Providing to landowners a map of underground and overhead transmission lines on their property and advising landowners of possible health risks.

(f) Designing and maintaining all transmission lines so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public.

[Amendment #1 (SFWF)]

82 In advance of, and during, preparation of detailed design drawings and specifications for 230-kV and 34.5-kV transmission lines, the certificate holder shall consult with the Utility Safety and Reliability Section of the Oregon Public Utility Commission to ensure that the designs and specifications are consistent with applicable codes and standards.

8. Plants, Wildlife & Habitat Protection Conditions

83 The certificate holder shall conduct wildlife monitoring as described in the *Wildlife Monitoring and Mitigation Plan* that is incorporated in the *Final Order on Amendment #1* as Attachment A and as amended from time to time. [Amendment #1 (SFWF); Amendment #1]

84 The certificate holder shall restore areas disturbed by facility construction but not occupied by permanent facility structures according to the methods and monitoring procedures described in the Revegetation Plan that is incorporated in the Final Order on Amendment #1 for the Shepherds Flat Wind Farm as Attachment SFC-B and as amended from time to time. [Amendment #1 (SFWF)]

- 85 The certificate holder shall acquire the legal right to create, enhance, maintain and protect a habitat mitigation area as long as the site certificate is in effect by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department. Within the habitat mitigation area, the certificate holder shall improve the habitat quality as described in the *Habitat Mitigation Plan* that is incorporated in the *Final Order on Amendment #1* as Attachment C and as amended from time to time. [Amendment #1 (SFWF); Amendment #1]
- 86 The certificate holder shall avoid permanent and temporary disturbance to the areas described in (a) through (g) and, during the times indicated, shall avoid construction disturbance in the areas described in (h) through (k). The certificate holder shall flag these areas for the duration of construction activities nearby and shall ensure that construction personnel avoid disturbance of the areas. The avoidance areas are:
- (a) All Category 1 habitat and those areas of Category 2 habitat shown on the “ODFW-2” Figures 1 through 12 in the Shepherds Flat Wind Farm Application. [Amendment #1 (SFWF)]
 - (b) Areas of Category 3 shrub-steppe habitat as described in the *Final Order on Amendment #1 for the Shepherds Flat Wind Farm*, Section IV.4.(b)A, including three small areas of sage shrub-steppe habitat, one small area of purshia shrub-steppe habitat and one small area of shrub-steppe rabbitbrush habitat. [Amendment #1 (SFWF)]
 - (c) All seeps, riparian areas and vernal pools.
 - (d) All water sources for wildlife, including perennial and intermittent streams, stock ponds and watering stations.
 - (e) All faces of bluffs or rock outcroppings.
 - (f) All trees or other structures that contain active raptor nests.
 - (g) For the facility substation and field workshop, all Category 3 habitat. [Amendment #1 (SFWF)]
 - (h) The area within 1,000 feet of Category 2 Washington ground squirrel (WGS) habitat (as shown on “ODFW-2” Figure 8 in the Shepherds Flat Wind Farm Application) during the period in which the squirrels are active. To determine when the WGS are active, the certificate holder shall hire a qualified independent professional biologist to monitor the on-site colony within the Category 1 WGS habitat area described in the Final Order on the Application. The biologist shall begin monitoring the colony on January 15 if construction activity is occurring within 0.5 miles of the Category 2 WGS habitat at that time. Otherwise, the biologist shall begin monitoring upon the start of construction activity within 0.5 miles of the Category 2 WGS habitat at any time between January 15 and June 30. The biologist shall conduct weekly monitoring to detect signs of WGS activity. If signs of WGS activity are observed, the certificate holder shall halt construction activities within the avoidance area and shall notify the Department. The certificate holder shall flag the avoidance area and ensure that construction personnel avoid disturbance of the area until the biologist has determined that the WGS are no longer active. While the WGS are active, the biologist may suspend weekly monitoring until May 1. The certificate holder may resume construction activities within the avoidance area when the WGS are no longer active, as determined by the absence of WGS activity during three consecutive weeks of monitoring by the biologist. [This text had been removed by Amendment #1 (SFWF) and was restored by Amendment #1]
 - (i) The area within 0.5 miles of Category 3 curlew nesting habitat and the area within 0.5 miles the BLM Horn Butte Wildlife Area during the nesting season (March 8 through June

15). Before beginning construction, the certificate holder shall provide to the Department a map showing these avoidance areas relative to areas of potential construction disturbance. The certificate holder may engage in construction activities in these areas at times other than the nesting season.

(j) The area within 1,000 feet of any essential, limited and irreplaceable Washington ground squirrel (WGS) habitat within the new areas added to the site by Amendment #1 (excluding the areas within the site boundaries of Shepherds Flat North, Shepherds Flat Central and Shepherds Flat South as approved on September 11, 2009) during the period in which the squirrels are active. The certificate holder shall hire a qualified independent professional biologist to conduct pre-construction surveys for State-listed threatened, endangered or sensitive wildlife species in these new areas within 1,000 feet of any area potentially disturbed by facility construction. To determine whether WGS habitat exists and to determine whether WGS are active, the biologist shall search for WGS in suitable habitat using a two-survey protocol approved by the Oregon Department of Fish and Wildlife (ODFW). The certificate holder shall submit the results of the survey to ODFW and to the Department. If signs of WGS activity are observed, the certificate holder shall flag the avoidance area and ensure that construction personnel avoid disturbance of the area until the biologist has determined that the WGS are no longer active.

(k) Areas within a suitable buffer around confirmed populations of Laurent's milk-vetch or any other State-listed threatened or endangered plant species within the new areas added to the site by Amendment #1 (excluding the area within the site boundaries of Shepherds Flat North, Shepherds Flat Central and Shepherds Flat South as approved on September 11, 2009). The certificate holder shall not install facility components or cause temporary disturbance within these areas. The certificate holder shall hire a qualified independent professional biologist to conduct pre-construction surveys for State-listed threatened or endangered plant species in these new areas within 1,000 feet of any area potentially disturbed by facility construction. The certificate holder shall submit the results of the survey to the Department.

[Amendment #1]

87 The certificate holder shall microsite the facility in conformance with the industry's best practices. The certificate holder shall follow the recommendations of a qualified wildlife biologist to avoid building turbine towers in the following locations:

(a) Areas of increased risk to avian species due to constricted flight paths, such as narrow ridge saddles and gaps between hilltops.

(b) Areas on slopes greater than 20 percent.

(c) [text removed by Amendment #1 (SFWF)]

(d) [text removed by Amendment #1 (SFWF)]

88 During construction, the certificate holder shall avoid construction activities in areas around active nests of the following species during the sensitive period, as provided in this condition:

<u>Species</u>	<u>Sensitive Period</u>	<u>Early Release Date</u>
Swainson's hawk	April 1 to August 15	May 31
Ferruginous hawk	March 15 to August 15	May 31
Burrowing owl	April 1 to August 15	July 15

The certificate holder shall conduct pre-construction surveys, using a protocol approved by the Oregon Department of Fish and Wildlife (ODFW) to determine whether there are any active nests of these species within 0.5 miles of any areas that would be disturbed during construction. The certificate holder shall search the scheduled construction areas and all areas within 0.5 miles of the construction areas. If a nest is occupied by any of these species after the beginning of the sensitive period, the certificate holder will flag the boundaries of a 0.5-mile buffer area around the nest and shall instruct construction personnel to avoid disturbance of the area. The certificate holder shall hire a qualified independent professional biologist to observe the active nest sites during the sensitive period for signs of disturbance and to notify the Department of any non-compliance with this condition. If the biologist observes nest site abandonment or other adverse impact to nesting activity, the certificate holder shall implement appropriate mitigation, in consultation with ODFW and subject to the approval of the Department, unless the adverse impact is clearly shown to have a cause other than construction activity. The certificate holder may begin or resume construction activities within a buffer area before the ending day of the sensitive period if any known nest site is not occupied by the early release date. If a nest site is occupied, then the certificate holder may begin or resume construction before the ending day of the sensitive period with the approval of ODFW, after the young are fledged. The certificate holder shall use a protocol approved by ODFW to determine when the young are fledged (the young are independent of the core nest site).

89 The certificate holder shall not remove any trees that are greater than three feet in height.

90 The certificate holder shall design all aboveground transmission line support structures following the most current suggested practices for avian protection on power lines published by the Avian Power Line Interaction Committee.

91 The certificate holder shall reduce the risk of injuries to avian species by:

(a) Installing turbine towers that are smooth steel structures that lack features that would allow avian perching.

(b) Installing meteorological towers that are non-guyed structures to eliminate the risk of avian collision with guy-wires.

(c) Avoiding installation of aboveground transmission lines across narrow saddles, ravines and similar features and, where such crossings cannot be avoided, installing line-markers to make the lines more visible to avian species.

92 The certificate holder shall impose and enforce construction and operation speed limits of 5 miles per hour on roads within 1,000 feet of Category 1 or Category 2 Washington ground squirrel habitat and 20 miles per hour on all other facility roads and shall ensure that all construction and operations personnel are instructed on the importance of cautious driving practices while on facility roads. [Amendment #1 (SFWF); Amendment #1]

9. Visual Effects Conditions

93 To reduce the visual impact of the facility, the certificate holder shall:

- (a) Mount nacelles on smooth, steel structures, painted uniformly in a matte-finish, neutral white color.
- (b) Paint substation structures in a neutral color to blend with the surrounding landscape.
- (c) Not allow any advertising to be used on any part of the facility.
- (d) Use only those signs required for facility safety, required by law or otherwise required by this site certificate, except that the certificate holder may erect a sign to identify the facility near the field workshop, may paint turbine numbers on each tower and may allow unobtrusive manufacturers' logos on turbine nacelles.
- (e) Not locate any facility signs along Highway 74.
- (f) Design signs in accordance with Gilliam County Zoning Ordinance Section 8.030 and Morrow County Zoning Ordinance Section 4.070, as applicable.
- (g) Maintain any signs allowed under this condition in good repair.

[Amendment #1 (SFWF)]

- 94 The certificate holder shall design and construct the field workshop to be generally consistent with the character of similar buildings used by commercial farmers or ranchers in the area and shall paint the building in a neutral color to blend with the surrounding landscape. [Amendment #1 (SFWF)]
- 95 The certificate holder shall not use exterior nighttime lighting except:
- (a) The minimum turbine tower lighting required or recommended by the Federal Aviation Administration.
- (b) Security lighting at the field workshop and substation, provided that such lighting is shielded or downward-directed to reduce glare.
- (c) Minimum lighting necessary for repairs or emergencies.
- (d) Minimum lighting necessary for nighttime construction. The certificate holder may use lighting only at the work location and only directed downward to illuminate the work area at the turbine base or upward from the base to illuminate the turbine tower; construction lighting shall not be directed outward. The certificate holder shall use nighttime lighting only with the approval of the owner of the property on which the work is conducted and shall provide notice of nighttime construction to occupants of all residences within one-half mile of the construction site.

[Amendment #1 (SFWF)]

10. Noise Control Conditions

- 96 To reduce noise impacts at nearby residences, the certificate holder shall:
- (a) Confine the noisiest operation of heavy construction equipment to the daylight hours.
- (b) Require contractors to install and maintain exhaust mufflers on all combustion engine-powered equipment; and
- (c) Establish a complaint response system at the construction manager's office to address noise complaints.
- 97 Before beginning construction, the certificate holder shall provide to the Department:
- (a) Information that identifies the final design locations of all turbines to be built at the facility.

(b) The maximum sound power level for the substation transformers and the maximum sound power level and octave band data for the turbines selected for the facility based on manufacturers' warranties or confirmed by other means acceptable to the Department.

(c) The results of noise analysis of the facility to be built according to the final design performed in a manner consistent with the requirements of OAR 340-035-0035 (1)(b)(B)(iii)(IV) and (VI) demonstrating to the satisfaction of the Department that the total noise generated by the facility (including the noise from turbines and substation transformers) would meet the ambient degradation test and maximum allowable test at the appropriate measurement point for all potentially-affected noise sensitive properties.

(d) For each noise-sensitive property where the certificate holder relies on a noise waiver to demonstrate compliance in accordance with OAR 340-035-0035 (1)(b)(B)(iii)(III), a copy of the a legally effective easement or real covenant pursuant to which the owner of the property authorizes the certificate holder's operation of the facility to increase ambient statistical noise levels L_{10} and L_{50} by more than 10 dBA at the appropriate measurement point. The legally-effective easement or real covenant must: include a legal description of the burdened property (the noise sensitive property); be recorded in the real property records of the county; expressly benefit the certificate holder; expressly run with the land and bind all future owners, lessees or holders of any interest in the burdened property; and not be subject to revocation without the certificate holder's written approval.

98 During operation, the certificate holder shall maintain a complaint response system to address noise complaints. The certificate holder shall promptly notify the Department of any complaints received regarding facility noise and of any actions taken by the certificate holder to address those complaints. In response to a complaint from the owner of a noise sensitive property regarding noise levels during operation of the facility, the Council may require the certificate holder to monitor and record the statistical noise levels to verify that the certificate holder is operating the facility in compliance with the noise control regulations. [Amendment #1 (SFWF)]

11. Waste Management Conditions

99 The certificate holder shall provide portable toilets for on-site sewage handling during construction and shall ensure that they are pumped and cleaned regularly by a licensed contractor who is qualified to pump and clean portable toilet facilities.

100 During operation, the certificate holder shall discharge sanitary wastewater generated at the field workshop to a licensed on-site septic system in compliance with county permit requirements. The certificate holder shall design the septic system for a discharge capacity of less than 2,500 gallons per day. [Amendment #1 (SFWF)]

101 The certificate holder shall implement a waste management plan during construction that includes but is not limited to the following measures:

(a) Recycling steel and other metal scrap.

(b) Recycling wood waste.

(c) Recycling packaging wastes such as paper and cardboard.

(d) Collecting non-recyclable waste for transport to a local landfill by a licensed waste hauler or by using facility equipment and personnel to haul the waste.

(e) Segregating all hazardous wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for

disposal by a licensed firm specializing in the proper recycling or disposal of hazardous wastes.

(f) Discharging all concrete truck rinse water into foundation holes and completing truck wash-down off-site.

102 The certificate holder shall implement a waste management plan during operation that includes but is not limited to the following measures:

(a) Training employees to minimize and recycle solid waste.

(b) Recycling paper products, metals, glass and plastics.

(c) Recycling used oil and hydraulic fluid.

(d) Collecting non-recyclable waste for transport to a local landfill by a licensed waste hauler or by using facility equipment and personnel to haul the waste.

(e) Segregating all hazardous, non-recyclable wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous wastes.

103 Before beginning construction, the certificate holder shall determine whether any construction disturbance would occur in locations not previously investigated for potential jurisdictional waters as described in the *Final Order on Amendment #1*. The certificate holder shall conduct pre-construction investigations in these new areas within 1,000 feet of any area potentially disturbed by facility construction to determine whether any State-jurisdictional waters exist in those locations. The certificate holder shall submit a written report on the pre-construction investigation to the Department of Energy and to the Department of State Lands for approval before beginning construction and shall ensure that construction would have no impact on any jurisdictional water identified in the report.
[Amendment #1]

VI. SUCCESSORS AND ASSIGNS

To transfer this site certificate or any portion thereof or to assign or dispose of it in any other manner, directly or indirectly, the certificate holder shall comply with OAR 345-027-0100.

VII. SEVERABILITY AND CONSTRUCTION

If any provision of this agreement and certificate is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and conditions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if the agreement and certificate did not contain the particular provision held to be invalid.

VIII. GOVERNING LAW AND FORUM

This site certificate shall be governed by the laws of the State of Oregon. Any litigation or arbitration arising out of this agreement shall be conducted in an appropriate forum in Oregon.

IX. EXECUTION AND EFFECTIVE DATE

This site certificate may be executed in counterparts and will become effective upon signature by the Chair of the Energy Facility Siting Council and the authorized representative of the certificate holder. [Amendment #1 (SFWF); Amendment #1]

1 **IN WITNESS WHEREOF**, this site certificate has been executed by the State of Oregon, acting
2 by and through its Energy Facility Siting Council, and by South Hurlburt Wind, LLC.

ENERGY FACILITY SITING COUNCIL

SOUTH HURLBURT WIND, LLC

By: _____
Robert Shiprack, Chair
Oregon Energy Facility Siting Council

By: _____
Derrel A. Grant, Vice-President
South Hurlburt Wind, LLC

Date: March 12, 2010

Date: March 12, 2010

This page intentionally left blank

Attachment 2. DOGAMI Consultation Notes

This page intentionally left blank

Shepherd's Flat Central RFA 2 for Two Demo Turbines
Consultation with Oregon Department of Geology and Mineral Industries (DOGAMI) DRAFT
Summary
Portland, OR (Skype call-in)
August 20, 2019

Attendees

- **DOGAMI** – Yumei Wang, P.E. (via phone)
- **Oregon Department of Energy** – Christopher Clark (via phone)
- **Caithness Energy** – Vandana (Vann) Gupta, John Wanalista, P.E. (via phone)
- **Tetra Tech** – Carrie Konkol, Suzy Cavanagh, P.G. (via phone)

Meeting Purpose

This meeting was intended to satisfy OAR 345-021-0010(1)(h)(B) that requires pre-application consultation with DOGAMI for energy facilities. Accordingly, DOGAMI requested that notes be taken for review and comment by ODOE and DOGAMI and then included into the Request for Amendment to identify consultation.

Project Description:

- Caithness Energy has three operating wind farms in Oregon; Shepherd's Flat North, Shepherd's Flat Central, and Shepherd's Flat South. This Request for Amendment (RFA) 2 is to repower two turbines in Shepherd's Flat Central. The two "demo" turbines will be upgraded to current technology by modifying the turbine nacelles and exchanging existing blades for longer turbine blades on existing turbine towers.
- The plan is to repower these two turbines in the fall of this year during typical operation and maintenance activities. This is the first of four amendments to repower the remaining Shepherd's Flat turbines in each project area (north, central, and south).

Dialogue:

- RFA 2 will be submitted to ODOE early next week.
- The original application for site certificate (ASC) and Exhibit H were submitted in 2007. In the 2007 Exhibit H, Table 2 lists two faults (Arlington Shutler Butte fault and Columbia Hills structure) that have an epicentral distance of approximately 6 km away from the project area. The 2007 Exhibit H, Section 7 discusses design spectrum period which used 2006 IBC, Figure 8 shows a map of the faults that are referred to, and Figure 6 gives the response spectra. Those two faults have much higher spectral accelerations than if only IBC is looked at.

- The 2007 Exhibit H indicates that seismic does govern at this project area. DOGAMI requests that this is addressed in the report.
- DOGAMI requests that with any modification to the existing turbines, long period ground motions are looked at.
- Coming up this year in October, it is expected that the Oregon Structural Specialty Code will likely be updated to the current IBC and ASCE 7-16. DOGAMI suggests that Caithness consider running the forthcoming code on this in each of the forthcoming RFAs. Given the timing of this RFA 2, it may not be needed because it might be submitted prior to the update.
- Discussion on the weight of the blades. Caithness received load tables based on loads when the turbine operates from GE. The updated load tables were analyzed based on the existing foundations in the bearing capacity study. The bearing capacity study report includes an overturning analysis and sliding check, etc.
- DOGAMI requested that these consultation notes be attached to the RFA and to be sure that any reports are consistent with the Oregon requirements.
- This RFA 2 is following the Type B process and the format does not include an Exhibit H, but the applicant will respond to the structural standard within the RFA. The prior site-specific geotechnical studies were included in the 2007 submittal prior to construction and will not be conducted for this RFA.
- DOGAMI requested that current code and the future code, addressing long series ground motion with those two specific faults (Arlington Shutler Butte fault and Columbia Hills structure) be addressed. Look at it from a deterministic basis, not just a probabilistic basis. Yumei will flag a few pages of the previous Exhibit H and email out to the group.
- DOGAMI requested that disaster resilience and future climate change are addressed in the document.
- The timeline is to get the notes to DOGAMI this week for review. The RFA and bearing capacity study will be sent to DOGAMI via ODOE next week.

Action Items

- Tetra Tech will prepare draft consultation meeting notes and email to DOGAMI for review within this week.
- DOGAMI to send out relevant pages of the 2007 ASC Exhibit H in regards to faults and seismic information to consider.
- Caithness will verify seismic design information in the bearing capacity study, as well as the pending Oregon Structural Specialty Code updates, prior to submittal.
- Caithness/TT to send DOGAMI (cc ODOE) bearing capacity study for review, possibly prior to RFA 2 being delivered to ODOE.

Additional Notes

- After the consultation call, Caithness looked at seismic parameters for both ASCE 7-10 and ASCE 7-16 using coordinates for turbines T-368 and T-370. The ASCE 7-16 analysis show the seismic coefficients decrease slightly from ASCE 7-10. This information will be included in RFA2.

This page intentionally left blank

Attachment 3. Foundation Analysis

This page intentionally left blank



August 16, 2019

Via email:

jwanalista@caithnessenergy.com

ktalovich@caithnessenergy.com

John Wanalista
Kenneth Talovich
Caithness Services, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017

**Re: Uprate Evaluation of Existing Wind Turbine Foundations
Shepherds Flat Wind Project – Gilliam and Morrow Counties, Oregon
Turbines T368 and T370
RRC Project No.: SE1907034**

Dear Mr. Wanalista and Mr. Talovich,

This letter is written to present the results of evaluating the existing GE 2.5MW xl+ 85-meter hub height 100-meter rotor diameter (GE 2.5) wind turbine foundations on the Shepherds Flat Wind Project located in Gilliam and Morrow Counties, Oregon based on new loads provided by GE for their GE 2.75MW 85-meter hub height 127-meter rotor diameter (GE 2.75) wind turbine. The turbine extreme loads, operational “no uplift” loads, and fatigue loads are different than the original GE 2.5 loads, so various design checks were completed based on the new loads. RRC’s understanding is that just two turbine locations are initially being considered to be uprated: turbines T368 and T370. The remaining turbines on the project may be uprated at future time and an additional analysis will be required to evaluate those foundations at that time. This current analysis is only considering turbines T368 and T370.

Project Background

The original foundation design for the GE 2.5 turbine was created by RRC Power & Energy, LLC (RRC, formerly known as Renewable Resource Consultants) between 2009 and 2010. One octagonal, spread foundation design was created with a 56’-0” diameter. The turbine foundations were constructed with GE 2.5 turbines and the drawings were issued for construction on October 14, 2009. The latest revision of the foundation drawings were issued on March 7, 2011.

Analysis

GE provided site-specific loads for the GE 2.75 turbines which include fatigue loads that incorporate the directionality of the wind that assumed 8 years of existing operation for the GE 2.5 turbines plus 20 years of additional operation after the uprate.

These loads were used to perform all of the design checks according to current industry standards using the existing GE 2.5 foundation design. Project job book documentation that included concrete strength and grout strength were reviewed as part of this analysis.

Seismic Considerations

Based on the current 2014 Oregon Structural Specialty Code, which relies on ASCE 7-10, the seismic ground acceleration factors, S_s and S_1 , for this project are approximately 0.439 and 0.174 respectively. Based on experience, seismic acceleration factors of that magnitude do not normally govern over the design wind loads for wind turbines. In RRC's experience, seismic loads do not begin to control unless a project is located very close to a known seismic fault typically in certain parts of California where S_s ground acceleration factors are over 1.5 for example compared to 0.439 for this project location. This is also backed up by GE's 2.75MW load document in section 1.7 where it states:

"Given the level of seismicity at the Shepherds Flat site, seismic loads are expected not to govern the design of the foundation at this site."

As it relates to geotechnical aspects of the project, seismic considerations were made during the original geotechnical evaluation and original construction of the project. Based on this information, RRC is confident that the existing wind turbine foundation structures have already been designed for loads and conditions that exceed the seismic conditions for the Shepherds Flat Wind Project and appropriate seismic considerations were taken into account during the original construction that would still meet the current standards.

Results

The extreme loads control the design of a majority of the foundation structural components while the operational "no uplift" loads are loads under which the foundation must maintain 100% contact with the subgrade for certain geotechnical conditions. A comparison of the extreme and operational "no uplift" loads between the original GE 2.5 loads and the uprated GE 2.75 loads is shown below:

GE 2.5 vs. GE 2.75 LoTurbine Loads						
	Extreme Overturning Loads			"No Uplift" Loads		
	GE 2.5	GE 2.75		GE 2.5	GE 2.75	
Controlling Load Case	6.2	2.2		4.1	1.0	
Axial Load	689.8 kips	751.1 kips	8.89%	706.2 kips	755.5 kips	6.98%
Shear Load	206.4 kips	163.3 kips	-20.88%	79.2 kips	94.9 kips	19.82%
Overturning Moment	48,378 k-ft	43,488 k-ft	-10.11%	21,281 k-ft	25,154 k-ft	18.20%

As can be seen in the table above, the extreme loads for the GE 2.75 turbine decreased from the original GE 2.5 extreme loads, but the operational "no uplift" loads increased significantly. **As a result, the extreme load checks from the existing foundation design pass using the new GE 2.75 loads.**

The other item of some concern based on the load summary above are the operational “no uplift” loads. **Based on a finite element model of the foundation, it was confirmed that the foundation does not gap during operation when using reasonable overall weight assumptions for concrete and backfill even when using the higher loads of the uprated turbines.**

GE 2.75 Extreme Load Analysis Design Results			
Design Check Performed	Design Requirement/ Capacity	Uprate Results	Result
Extreme Bearing Check	3,200 psf	1,520 psf	Pass
Factor of Safety to Sliding Check	>1.5	4.23	Pass
Foundation Gapping	0%	0%	Pass
Minimum Horizontal Stiffness	1000 kN/mm	1,918 kN/mm	Pass
Minimum Static Rotational Stiffness	1.00E7 kN-m/rad	2.36E7 kN-m/rad	Pass
Minimum Dynamic Rotational Stiffness	5.00E7 kN-m/rad	1.31E8 kN-m/rad	Pass
Stability Check – Factor of Safety to Overturning for Combined tower/turbine/foundation	1.67	2.22	Pass
Base Reinforcement Design	All Locations Passed		Pass
Base One-Way Shear Check	$V_u/\phi V_c < 1.0$	0.61	Pass
Anchor Bolt Design Check	168.8 kips	127.1 kips (max tension)	Pass
Pedestal Design Check	See Note 1		Pass
Base Embedment Ring Pull-Out Design Check	$T_f/\phi V_c < 1.0$	0.845	Pass
Embedment Ring Design Check – Minimum Embedment Ring Plate Thickness	1.25 inch	1.15 inches	Pass

1. The width of the “bursting” tension zone below the tower flange is less than the width of the tower flange itself. This size of bursting zone is small enough such that tensile reinforcement is not needed. However, visual inspections of the foundations will be performed to verify that no signs of distress are present in the pedestals.

The fatigue analysis is based on the Markov fatigue loads provided by GE. GE provided fatigue loads for this analysis that accounted for 8 years of existing GE 2.5 turbine operation and 20 years of additional fatigue loads to account for the operation of the GE 2.75 turbine if/when used. The Markov loads are comprised of thousands of load cases and associated occurrence cycles. The fatigue analysis is performed by calculating an equivalent damage ratio for various components of the foundation which is calculated by summing the calculated number of design life cycles (N) by the associated occurrence cycles (n) for each of the thousands of load cases provided in the Markov data. RRC uses the methods described in the DNVGL-ST-C502 August 2017 edition document to perform the fatigue checks, which is an updated version compared to what was available when the original GE 2.5 foundations were designed. Fatigue standards have become more stringent as the wind industry has matured over the years and typically govern several foundation design components of new design projects.

For concrete that can be inspected and repaired, a fatigue check is considered to be passing if the equivalent damage ratio is less than 1.0. For reinforcement, a fatigue check is conservatively considered to be passing if the equivalent damage ratio is less than 0.33 (when

the reinforcement component is not able to be inspected or repaired, as in the case with these wind turbine foundations). Note that at the time of the foundation design, it was industry standard to use an equivalent damage ratio less than 0.5 for reinforcement that could not be inspected. The damage ratios shown below are for the complete 8-year operation of the GE 2.5 turbines plus 20 years of additional GE 2.75 operation. A summary of the results of the fatigue design checks is shown in the following table:

Fatigue Analysis Design Results		
Design Check Performed	Calculation	Result
Base Flexural Concrete Compression (Uplift Side)	1.35E-11	Pass
Base Flexural Concrete Compression (Bearing Side)	2.70E-11	Pass
Base Flexural Reinforcement Tension (Uplift Side)	0.171	Pass
Base Flexural Reinforcement Tension (Bearing Side)	0.002	Pass
Base Pull-Out Cone Above Embedment Ring (Concrete)	0.185	Pass
Base Pull-Out Cone Above Embedment Ring (Reinforcement)	0.622	Fail
Base Pull-Out Cone Above Embedment Ring (Reinforcement Bond)	62.32	Fail
Base One-Way Shear (Uplift Side)	5.60E-06	Pass
Base One-Way Shear (Bearing Side)	5.47E-04	Pass
Pedestal Grout Bearing	0.004	Pass
Pedestal Concrete Bearing	2.38E-09	Pass

As can be seen above, the pull-out fatigue checks do not pass.

Conclusions

The only design check that failed using the uprated turbine loads was the pull-out fatigue checks and since the reinforcement portion of that check was below 1.0, it's a sign that failure may not occur. The 0.33 limit requirement for new construction is based on reinforcement that can't be inspected not that the reinforcement fails if it reaches a ratio of 0.33. The calculations above also ignore the fact that the in-place concrete strength is well above 6,000 psi based on the job book logs when the original specified strength was only 5,000 psi. The results would indicate that the risk of uprating the turbines with respect to the foundations is relatively low.

Additionally, knowing that design calculations have a certain amount of conservatism built into them, a reasonable approach to analyzing existing structures like this is to inspect and observe the foundations over time and look for any warning signs that may arise to correlate the calculation results with the reality of the physical structures. If inspections can show that signs of damage or loss of strength capacity are not observed, which are not expected, then it may indicate that the calculations are being conservative and it may be possible to operate the turbines while closely monitoring them for any signs of damage or loss of strength capacity over time.

In the unlikely event that the inspections and observations show signs of damage or that the foundations may be losing strength capacity, then the foundations could be retrofitted or otherwise modified in order to reduce the stresses on the existing components or redirect the stresses to newly added design components. This may be very difficult, time consuming, and expensive to accomplish, but it is possible to do. For the design check that doesn't pass, a concrete collar would likely need to be installed around the pedestal with hundreds of reinforcement bars doweled into the existing base and pedestal concrete.

RRC would recommend an initial visual inspection of the turbine foundations prior to performing the turbine uprates to verify that there are no concerning visual signs of concerning foundation degradation. Assuming the results of that visual inspection are positive, then uprating the turbines can be conducted. However, RRC would still recommend developing a long-term inspection program to observe the foundations for any warning signs as the foundations age under the uprated turbines. If a long-term inspection program approach is utilized, RRC would recommend a collaboration with DNVGL to develop an appropriate inspection program because of their expertise in wind industry risk assessment and inspections.

Note this analysis is not considered a construction engineering document. Updated stamped engineering design calculations and drawings would need to be completed and issued prior to uprating any turbines or performing any structural changes to the foundations.

Please contact our office with any questions you may have.

Sincerely,
RRC Power & Energy, LLC



Ben Krause, PE (MN)
Director, Structural & Geo. Ops.



Jason Stripling, PE (OR) 8/16/2019
Sr. Structural Engineer



References:

1. "Shepherds Flat Foundation Design Drawings" from Renewable Resource Consultants, LLC dated March 7, 2011, Rev. 8.
2. "Wind Turbine Foundation Design Calculations, Blattner Energy, Inc., Shepherds Flat Wind Project, Foundation Design for GE 2.5MW xl+ 85m HH IEC TC IIB, Standard Weather Wind Turbine, Arlington, Oregon" from Renewable Resource Consultants, LLC dated July 26, 2010, Project Number: 090172, Rev. 3.
3. "Foundation Load Specification for Wind Turbine Generator Systems, Shepherds Flat Demo RePower, Oregon (GE Project 1215678), 2.75-127, 60 Hz, 85m Hub Height" from General Electric dated August 5, 2019, Rev. 02, Foundation_Load_Drawing_1215678_Shepherds_Flat_Demo_2.75-127_85mHH_r02.
 - a. Fatigue Data: Markov_Matrices_1215678_Shepherds_Flat_Demo_2.75-127_85mHH_r02.xlsx"

4. Commercial Documentation, Wind Turbine Generator Systems, GE 2.5XL+, Requirements for the Tower to Foundation Interface, IEC IIB - 85 m Hub Height, Standard Weather Design" Figure 2 from GE Energy dated 2010.

Attachment 4. Seismic Data

This page intentionally left blank

Search Information

Coordinates: 45.656019, -120.056347

Elevation: ft

Timestamp: 2019-08-21T19:25:28.932Z

Hazard Type: Seismic

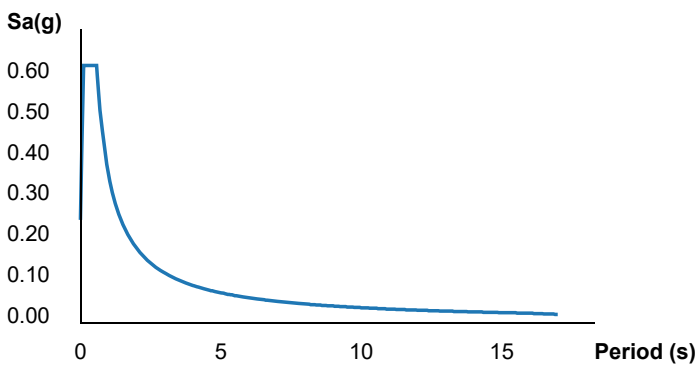
Reference Document: ASCE7-10

Risk Category: II

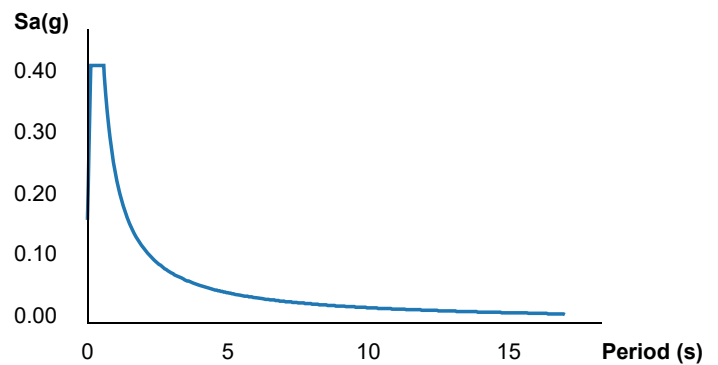
Site Class: D



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.435	MCE _R ground motion (period=0.2s)
S_1	0.173	MCE _R ground motion (period=1.0s)
S_{MS}	0.631	Site-modified spectral acceleration value
S_{M1}	0.365	Site-modified spectral acceleration value
S_{DS}	0.421	Numeric seismic design value at 0.2s SA
S_{D1}	0.243	Numeric seismic design value at 1.0s SA

Additional Information

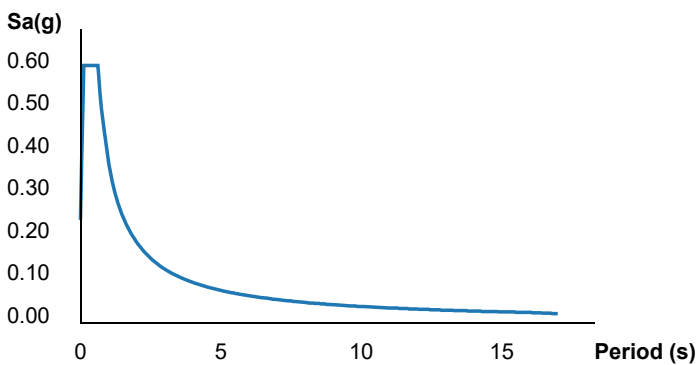
Name	Value	Description
SDC	D	Seismic design category
F_a	1.452	Site amplification factor at 0.2s
F_v	2.108	Site amplification factor at 1.0s
CR_S	0.914	Coefficient of risk (0.2s)
CR_1	0.896	Coefficient of risk (1.0s)
PGA	0.183	MCE _G peak ground acceleration
F_{PGA}	1.433	Site amplification factor at PGA

Search Information

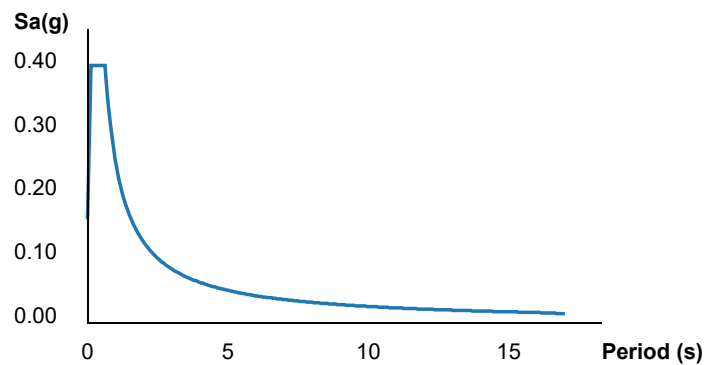
Coordinates: 45.656019, -120.056347
Elevation: ft
Timestamp: 2019-08-21T19:26:32.420Z
Hazard Type: Seismic
Reference Document: ASCE7-16
Risk Category: II
Site Class: D



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.412	MCE _R ground motion (period=0.2s)
S_1	0.167	MCE _R ground motion (period=1.0s)
S_{MS}	0.606	Site-modified spectral acceleration value
S_{M1}	0.379	Site-modified spectral acceleration value
S_{DS}	0.404	Numeric seismic design value at 0.2s SA
S_{D1}	0.253	Numeric seismic design value at 1.0s SA

Additional Information

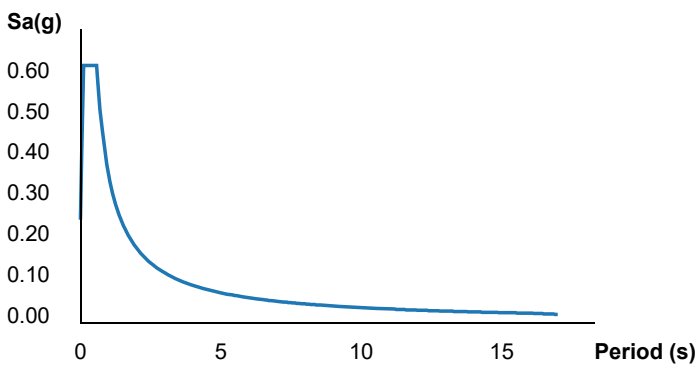
Name	Value	Description
SDC	D	Seismic design category
F_a	1.47	Site amplification factor at 0.2s
F_v	2.266	Site amplification factor at 1.0s
CR_S	0.904	Coefficient of risk (0.2s)
CR_1	0.887	Coefficient of risk (1.0s)
PGA	0.185	MCE _G peak ground acceleration
F_{PGA}	1.431	Site amplification factor at PGA

Search Information

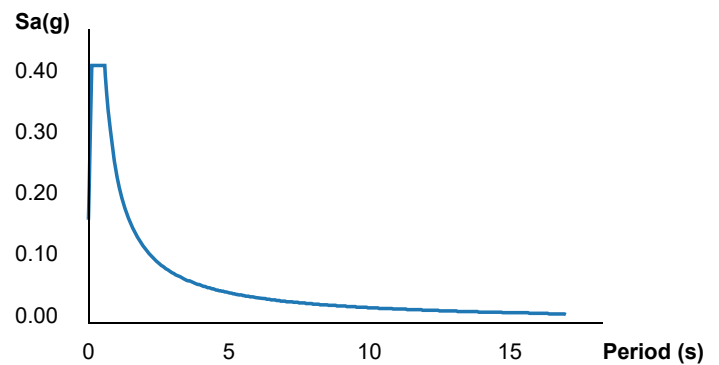
Coordinates: 45.651906, -120.052223
Elevation: ft
Timestamp: 2019-08-22T13:25:20.513Z
Hazard Type: Seismic
Reference Document: ASCE7-10
Risk Category: II
Site Class: D



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.434	MCE _R ground motion (period=0.2s)
S_1	0.173	MCE _R ground motion (period=1.0s)
S_{MS}	0.63	Site-modified spectral acceleration value
S_{M1}	0.365	Site-modified spectral acceleration value
S_{DS}	0.42	Numeric seismic design value at 0.2s SA
S_{D1}	0.243	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1.453	Site amplification factor at 0.2s
F_v	2.108	Site amplification factor at 1.0s
CR_S	0.914	Coefficient of risk (0.2s)
CR_1	0.897	Coefficient of risk (1.0s)
PGA	0.183	MCE _G peak ground acceleration
F_{PGA}	1.434	Site amplification factor at PGA

Search Information

Coordinates: 45.651906, -120.052223

Elevation: ft

Timestamp: 2019-08-22T13:25:59.665Z

Hazard Type: Seismic

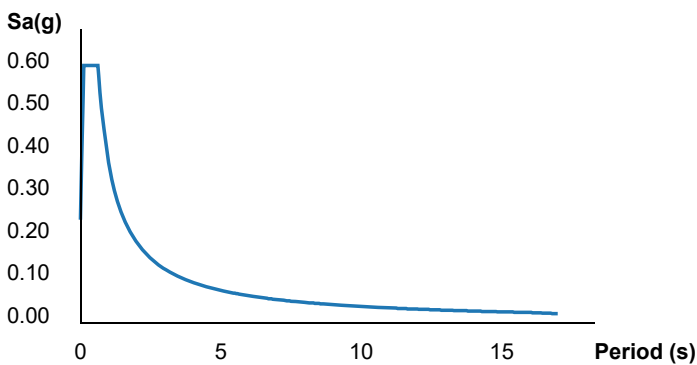
Reference Document: ASCE7-16

Risk Category: II

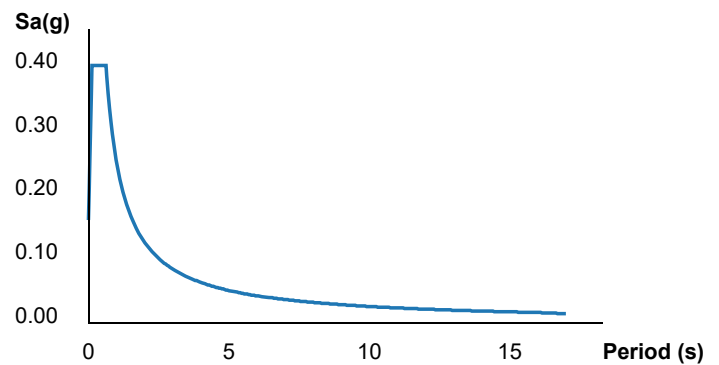
Site Class: D



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.412	MCE _R ground motion (period=0.2s)
S_1	0.167	MCE _R ground motion (period=1.0s)
S_{MS}	0.605	Site-modified spectral acceleration value
S_{M1}	0.378	Site-modified spectral acceleration value
S_{DS}	0.404	Numeric seismic design value at 0.2s SA
S_{D1}	0.252	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1.471	Site amplification factor at 0.2s
F_v	2.266	Site amplification factor at 1.0s
CR_S	0.904	Coefficient of risk (0.2s)
CR_1	0.887	Coefficient of risk (1.0s)
PGA	0.184	MCE _G peak ground acceleration
F_{PGA}	1.431	Site amplification factor at PGA

Attachment 5. Emergency Action Plan

This page intentionally left blank



Revision 14

Element 11-B

Emergency Preparedness and Fire Prevention

Page 2 of 18 Document No.: HS 11B Date: March 22 nd 2018 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	GE Renewable Energy Onshore Wind Projects & Services Environment, Health & Safety
---	---	--

Revision History

Revision No.	Date	Description of Change	Revised by
1	9/24/2007	Additional documents required for the Wind Field Operations group.	D. Olson
2	1/30/2008	Added cold weather policy.	D. Olson
3	2/28/2008	Updated Attachment 11, sections 4.5 to 4.9	D. Olson
4	5/16/2008	Updated Attachment 13, all of section 4.2.	D. Olson
5	9/2/2008	Updated definition of Attachment 12, 3.3, Safe Location and 4.5.	D. Olson
6	8/14/2009	Updated Attachment 3.3.1 of Attachment 11 from 5 minutes to 30 minutes.	D. Olson
7	9/4/2009	Added Attachment 14- EMS Coordination	A. Bitar M. Winward
8	11/5/2010	Updated Attachment 13 – clarify and improve guidance on icing	E. LaRiviere D. Schultz D. Olson L. Barlow D. Parker T. Brown S. O'Connor
9	1/7/2013	Updated language for 2.x turbines (focus on MVSG)	J. Bollenbecker
10	6/8/2013	Addition of Attachment 15 Hot Weather Work	S. Herranz
11	08/25/2017	Updated format and business Clarification to Attachment 11, Section 3.0 DTN Notification	J. Hock
12	08/21/2018	Added items 3.1.4 and 3.1.5 to Attachment 11 Modified wording on item 3.1.2 on Attachment 11	K. Magallanes
13	11/19/2018	Modified wording on item 3.1. to 3.6 on Attachment 11 to match with climbing rules	K. Magallanes
14	03/22/2019	Modified wording on item 3.1. & 3.5 on Attachment 11 to match with new terminology of the lightning monitoring system.	S. Lapointe

Page 3 of 18 Document No.: HS 11B Date: March 22 nd 2018 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	GE Renewable Energy Onshore Wind Projects & Services Environment, Health & Safety
---	---	--

1.0 Purpose and Scope

- 1.1 The purpose of this document is to provide additional guidance to the site in establishing an Emergency Preparedness Plan for the Wind Field Operations group (WFO). This addition to the Emergency Preparedness and Fire Prevention procedure is specific to the needs of the WFO group.
- 1.2 The addition includes activities at the service center as well as work carried out on the Projects and Services site. Contents of the additional guidance document are as follows:
 - 1.2.1 Attachment (11) - Lightning/High Winds
 - 1.2.2 Attachment (12) - Icing on Blades or External Equipment
 - 1.2.3 Attachment (13) - Cold Weather Work
 - 1.2.4 Attachment (14) - EMS Coordination

2.0 Auditing

- 2.1 This addition will be reviewed annually by completing the CEP Health and Safety Framework Element 11 "Emergency Preparedness" and updating the procedure accordingly.

Page 4 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
---	---	---

ATTACHMENT 11

Lightning / High Winds

1.0 Weather forecasts and observations

- 1.1 Forecasts must be consulted at the beginning of each work shift or the day before in order to prepare for any inclement weather.
- 1.2 No work shall be scheduled in the WTG towers if thunderstorms, lightning, rain, hail, or snow is in the near-term forecasts. Scope and duration of work shall be scheduled consistent with the forecast for the day.
- 1.3 All WTG maintenance work in the towers must be postponed until the weather clears up.

2.0 Working in WTG Towers during Storms

- 2.1 As weather conditions develop and are favorable for the formation of thunderstorms, use extreme caution when working in the field paying special attention to the developing weather conditions.
- 2.2 Site personnel should understand when, where, and how thunderstorms develop. If there is thunder heard in an approaching cloud, all work up-tower work will be stopped and all personnel will climb down and seek shelter.
- 2.3 It is everyone's responsibility to make sure that all personnel are notified of lightening in the area.
- 2.4 Contact the Site Leader or designee to inform them of lightning sightings.
 - 2.4.1 The Site Leader then notifies all personnel in the field that lightning is in the area.
 - 2.4.2 If employee cannot get ahold of the Area / Site Manager, then it becomes the responsibility of the person who had the sighting to notify all affected employees.
- 2.5 EVERY crew must respond by radio or other communications, acknowledging they have received the warning.
- 2.6 The Site Leader will decide if the employees should return to the service/project office or wait in service trucks for the storm to pass.
- 2.7 All work on tall, conductive structures will be stopped (this will include and is not limited to HV transmission lines, SCADA infrastructure, MET towers, or WTGs).
- 2.8 Adequate shelter may include service trucks. This acts as a faraday cage to protect against lightning strikes.

Page 5 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	GE Renewable Energy Onshore Wind Projects & Services Environment, Health & Safety
---	---	--

3.0 Lightning Limitations:

- 3.1 Digital detection tools (GE approved Severe Weather Alert & Monitoring System) will be implemented at site.
- 3.2 Level 1 (L1) Alert is defined as confirmed lightning between 48 and 80 km (30-50 miles) from where work is being performed. During a Level 1 Alert, all personnel are to be made aware of the lightning in the area and should be prepared to stop work and seek shelter as the storm moves closer. Direction and wind speed of the storm will be monitored at the office.
- 3.3 Level 2 (L2) Alert is defined as confirmed lightning detected less than 48 km (30 miles) from where work is being performed. During a Level 2 Alert all personnel are to stop work immediately and seek shelter at least 300 ft. away from the tower pad.
- 3.4 All Clear is given when no lightning strikes have been observed within a 30-mile radius from where work is being performed for a period greater than 30 minutes.
- 3.5 MET Towers: Both Level 1 (confirmed lightning between 48 and 80 km (30-50 miles)) and Level 2 Alerts (defined as confirmed Lightning less than 48 km (30 miles)) from the center-point of the site monitoring area where work is being performed, all personnel are to stop work immediately and seek for shelter at least 300 ft. away from the tower pad.

Teams cannot return to field work activities until all (L1 & L2) All Clear notifications have been issued. All Clear notification is set up in the GE approved Severe Weather Alert & Monitoring System as an alert to indicate there have been no lightning strikes observed within a 30-mile or 50-mile radius for a period greater than 30 minutes.

- 3.6 **Civil and Excavation Work without cranes involved:** Begin to seek shelter if lightning strike has been identified within 15 miles radius from where work is being performed. All Clear is given when no lightning strikes have been observed within a 15-mile radius from where work is being performed for a period greater than 30 minutes.

Note: Acceptable shelters are O&M buildings or fully enclosed structures, properly installed construction office trailers, "Fully enclosed" metal roofed vehicles or equipment with ROPS (with the windows up).

4.0 Working WTG Towers During High Winds

- 4.1 High wind speed is normally associated with thunderstorms. Wind may increase rapidly with little to no advanced warning. Use caution and be aware of debris that can and will be moved by the high wind.
- 4.2 Use care when seeking shelter in a service truck. High winds can severely damage doors.
- 4.3 Stay away from glass whenever possible. Sheer winds in a storm can blow trucks over. If winds get severe enough, pull over to a safe location and point truck into wind.
- 4.4 It is the responsibility of all employees to report severe wind changes out in the field i.e. severe directional change or severe increase in wind speed.
- 4.5 At an average wind speed (10-minute average) of less than 15 m/s (33 mph), there are no wind speed related restrictions on work at the WTG.
- 4.6 At an average wind speed (10-minute average) of 15m/s to 19 m/s (33 mph – 44 mph):

Prepared by: K. Magallaness

Approved by: Brian Walencik

Released by: NAM Onshore Wind Program Review Board

Page 6 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
---	---	---

- 4.6.1 Climbing on lattice towers is prohibited.
- 4.6.2 Climbing WTG's equipped with internal ladders will be permitted; however, no work shall be performed outside of the nacelle or transfers into the hub.

4.7 At an average wind speed (10-minute average) of 20 m/s (45 mph) or greater:

- 4.7.1 Climbing all WTG's is prohibited.

4.8 At wind speeds at or greater than 25m/s (60mph), no personnel are permitted to be out on the wind site. This restriction does not apply to office, service, or shop areas.

4.9 Exceptions to the above limits must be authorized by the site supervisor and site EHS after a risk assessment is performed.

Page 7 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
---	---	---

ATTACHMENT 12

Icing on Blade or External Equipment

1.0 Purpose

- 1.1 This procedure is designed to mitigate the risks associated with working on or near WTG's during conditions favorable to icing on blades and external WTG surfaces.

2.0 Overview

- 2.1 Under no condition will any WTG be approached by motor vehicle or accessed while ice is shedding from exterior surface of the WTG.
- 2.2 Site personnel will assess the risk of falling ice before planning work.

3.0 Definitions

- 3.1 Ice/Icing: Formation of frozen water on the surface of the WTG
- 3.2 WTG: Wind Turbine Generator.
- 3.3 Safe Location: Distance from the WTG equal to the product of 1.5 x (hub height + the rotor diameter). Note: for the 1.5 MW wind turbine, this distance can be conservatively assumed to be 300 meters if the calculation has not been done for a particular site.
- 3.4 SCADA: Supervisory Control and Diagnostic Analysis.
- 3.5 Shedding: Ice that is falling off or breaking away.

4.0 Assessing Icing on Blades or External Equipment

- 4.1 Weather forecasts must be consulted at the beginning of each work shift and discussed during pre-work / tailboard meetings. Weather should also be monitored through the day in order to prepare for any inclement weather.
- 4.2 In cold conditions in which the weather is favorable for ice forming, an initial inspection from a safe location shall be performed before any work begins on the WTG. Conditions that promote or indicate icing or ice shedding include:
 - 4.2.1 Below normal production for current wind speed/ irregular patterns in production
 - 4.2.2 Visible ice or snow on the turbine
 - 4.2.3 Signs of fallen ice around the turbine or in the surrounding area
 - 4.2.4 Temperatures around the freezing point
 - 4.2.5 Freezing rain within the last 24 hours
 - 4.2.6 Gusty or strong winds
 - 4.2.7 Strong or direct sunlight
- 4.3 If ice is observed shedding in the area, personnel should not attempt to enter the WTG. Personnel should remain in a safe location and contact site management immediately.

Prepared by: K. Magallaness

Approved by: Brian Walencik

Released by: NAM Onshore Wind Program Review Board

Page 8 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
---	---	---

5.0 Approaching Wind Turbines

- 5.1 The turbine shall be stopped remotely and nacelle shall be yawed to the desired location via SCADA. Preferably, the blades should be aligned opposite the entry door.
- 5.2 Once all motion has stopped, personnel should wait several minutes to ensure no ice is shedding before approaching the turbine.
- 5.3 At least one crewmember must be designated to watch for shedding ice while maintaining radio communication with the rest of the team. Binoculars or a spotting scope should be used to help identify ice on blades, nacelle or hub. If ice is observed, personnel should notify site management immediately before proceeding.
- 5.4 Approach the WTG with extreme care and park the service vehicle 60 feet away from the turbine. When parking vehicle attempt to minimize the need for personnel to walk through deep snow or ice. To avoid walking and handling materials through deep snow/ice, the vehicle may need to be parked closer than the normal distance from the WTG.
- 5.5 Approach the WTG from behind the hub to decrease risk of being hit if ice falls from the hub.
- 5.6 No work shall be performed on top of the WTG, including any transitions to the hub, wind vane, or FAA lights if there is ice present on the walking surfaces.
- 5.7 All WTG work in or on the towers must be postponed until the ice has shed and/or there is no danger of ice shedding.
- 5.8 If personnel are inside of a WTG when shedding begins, exiting from the tower is prohibited until the shedding has ceased.

Page 9 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p align="center">Health & Safety Procedure</p> <p align="center">Emergency Preparedness and Fire Prevention</p>	<p align="center">GE Renewable Energy</p> <p align="center">Onshore Wind Projects & Services Environment, Health & Safety</p>
---	---	---

ATTACHMENT 13

Cold Weather Work

1.0 Purpose

- 1.1 This procedure is designed to mitigate the risk(s) associated with working on or near WTG's during cold weather conditions.

2.0 Overview

- 2.1 Limits will be placed on various work activities when ambient temperature(s) exceed those identified in this procedure. Limits may also be put in place as wind speeds increase potential exposure to personnel (wind chill).

3.0 Definitions

- 3.1 WTG: - Wind Turbine Generator.
- 3.2 Ambient temperature: - The temperature of the air surrounding, inside or outside of an object, in this case a WTG. This does NOT include a Wind Chill Factor.
- 3.3 Wind Chill Factor: - The apparent temperature which describes the cooling effect on exposed skin by the combination of temperature and wind, expressed as the loss of body heat. Increased wind speed will accelerate the loss of body heat.
- 3.4 Frostbite: - The partial freezing of exposed parts of the body, causing injury to the skin and sometimes to deeper tissues. Often afflicts the nose, ears or other extremities of the body.
- 3.5 Hypothermia: - The condition of having an extremely low body temperature, often as a result of exposure to cold water or frigid atmospheric conditions. Normal body functions become impaired and the condition can eventually become fatal.
- 3.6 PPE: - Personal Protective Equipment
- 3.7 FR: - Flame Resistant (NFPA 70E)

4.0 Cold Weather Work and Restrictions

- 4.1 Work should be completed in the warmest part of the day when possible. Review local weather forecasts and try to adjust schedule accordingly.
- 4.2 The following restrictions will be followed for short-term extreme cold weather work. These restrictions are also represented in Figures 1 and 2, as indicated.
 - 4.2.1 At or below -12.2° C (10° F) site EHS representatives and site leadership will evaluate the work scope and any appropriate strategies to mitigate the effects of the temperature extreme.

Page 10 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	GE Renewable Energy Onshore Wind Projects & Services Environment, Health & Safety
--	---	--

- 4.2.2 Between -12.2° C (10° F) and -23.3° C (-10° F), entries to the hub will be restricted to the temperature and wind speed combinations indicated by the “white zone” depicted in Figure 1.
- 4.2.3 At or below -23.3° C (-10° F) hub entries will be halted due to potential for cold weather injury.
- 4.2.4 At or below -32° C (-24° F) all inside, up tower work will cease and all other work will follow the requirements of Figure 2.
 - 4.2.4.1 Requirements of Figure 2 must allow for an appropriate area for breaks or rest. Appropriate areas should be dry and allow for the body to warm up above ambient temperature.
- 4.2.5 No deviations to these limits will be allowed without a review being completed to discuss work scope, protective measures, PPE and immediate need. For Wind Field Services and Projects, this review must be completed with the Regional EHS Leader, Service Area Manager, Site Operations Leader and Site EHS Coordinator. The EHS Regional Leader and Service Area Manager must approve the request prior to any work being conducted. For Wind Global Field Operations, this review must be completed with the Regional EHS Leader, Pole Field Operations Manager, Project Manager, Site Manager and Site EHS Manager. The Regional EHS Manager and the Pole Field Operations Manager must approve the request prior to any work being conducted.
 - 4.2.5.1 For 2.x turbines only: During prolonged cold soak events where the grid remains de-energized and external ambient temperature is below -30 °C, the medium voltage switchgear will be disconnected from the grid automatically. Upon grid re-energization, the internal turbine air surrounding the MVSG must warm up above -25 °C prior to entering the turbine to reclose the MVSG. Additionally, use of the load disconnect switch panel of the switchgear must not be attempted until ambient air surrounding MVSG temperature is above - 25 °C.
- 4.3 Personal Protective Equipment (PPE) must meet the necessary requirements to protect the worker from the potential of arc flash associated with work around exposed energy sources.
 - 4.3.1 Outerwear must be composed of natural fiber with an appropriate weight or have an FR rating appropriate for the energy exposed to.
 - 4.3.2 Innerwear, which is in contact with the employees’ skin, must also be composed of natural fiber or have an FR rating.
- 4.4 Heaters are authorized in principle to modify ambient temperature conditions in the tower and in the nacelle. However, any heater used and its installation must be approved by the Regional EHS Leader and, if wiring is involved, the Engineering department. Heaters involving combustible liquids or gasses are discouraged and if approved will be operated in conjunction with a Hot Work Permit. JSA/RSA's will be created for all instances where a heater is to be used.

Page 11 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
--	---	---

5.0 Training

- 5.1 Personnel should recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
 - 5.1.1 Review of Figure 1 and Figure 2 should be completed.
- 5.2 Personnel should review the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- 5.3 At a minimum, once per season all site personnel will receive a tailboard talk on the danger of cold weather, signs of hypothermia, and the strategies to mitigate the effects of cold such as proper clothing, vehicle maintenance, the buddy system, access to break areas, and limiting exposure time.
- 5.4 Field service personnel will be assigned the Extreme Temperatures course in myLearning.

Figure 1

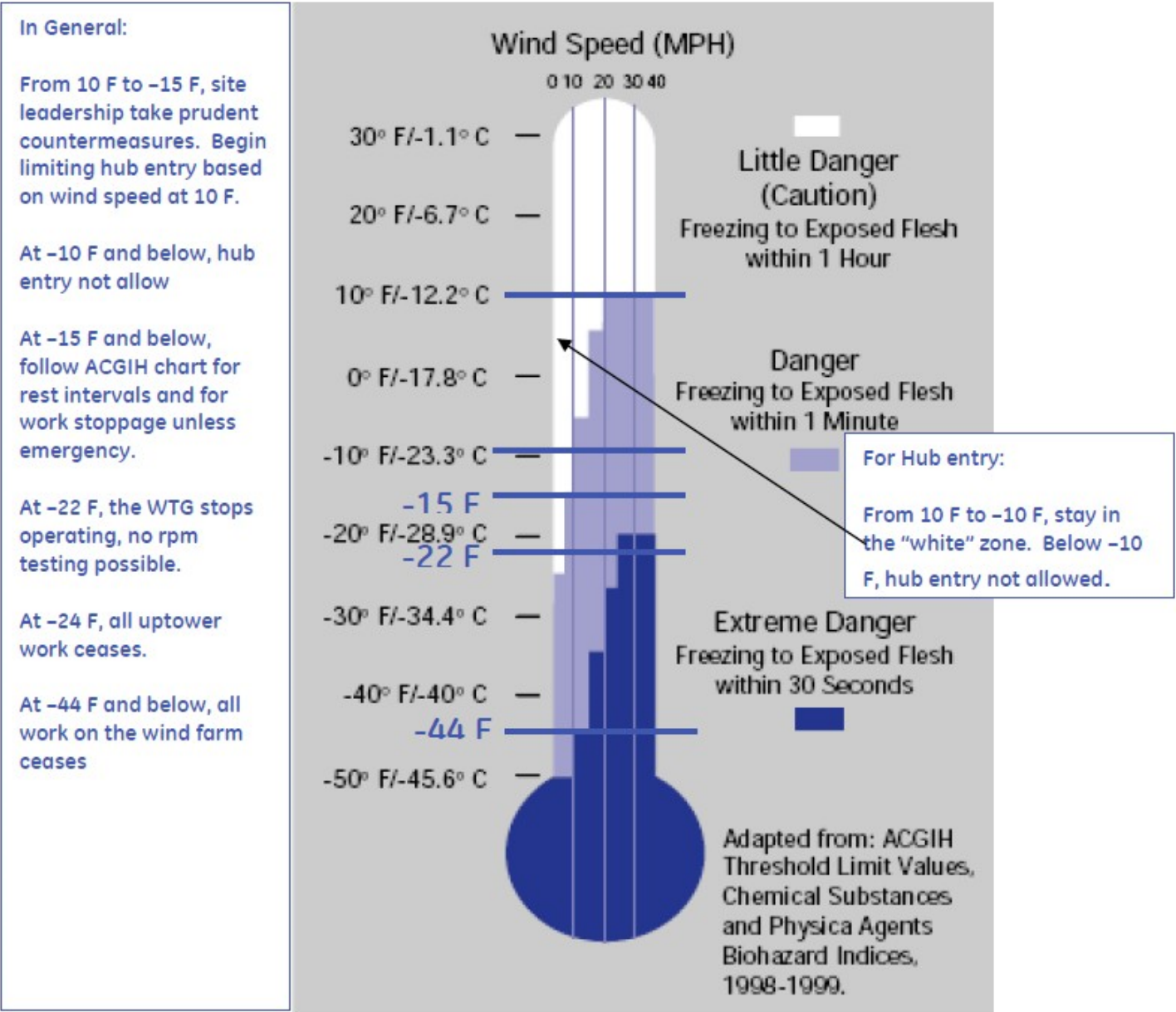


Figure 2

THRESHOLD LIMIT VALUES WORK/WARM-UP SCHEDULE FOR FOUR-HOUR SHIFT*												
Air Temperature Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind		
Inside up tower working window.	° C (approx)	° F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
	-26° to -28°	-15° to -19°	(Norm breaks) 1		(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4
	-29° to -31°	-20° to -24°	(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4	30 min.	5
	-32° to -34°	-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease ↓	
	-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease ↓			
	-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease ↓					
	-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease ↓							
-43° to below	-45° & below	Non-emergency work should cease		Non-emergency work should cease ↓								

• At -22 F (-30 C) the WTG will not operate.

Page 14 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
--	---	---

ATTACHMENT 14

EMS Coordination

1.0 Purpose

- 1.1 Facilitate effective coordination between the Wind Projects and Services site and the local emergency response organizations.

2.0 Overview

- 2.1 Site is required to share information and emergency plans with Local EMS and foster effective coordination in the event of an emergency.

3.0 Definitions

- 3.1 Local EMS – Local Emergency Medical Service (i.e. Fire Department)

4.0 EMS Coordination

- 4.1 Each Wind Projects and Services Sites shall establish a relationship with local EMS responders, including
 - 4.1.1 Orientation to the layout of the site
 - 4.1.1.1 Site turbine access roads.
 - 4.1.1.2 If access roads are gated, gated with locks, or electrical gates: identify muster point and responsible person that will meet and escort local EMS through gates to reach scene of emergency.
 - 4.1.1.3 Ensure responsible person has key/codes to proceed through locked gates.
 - 4.1.2 Hazards inherent to wind sites
 - 4.1.3 Emergency plans
 - 4.1.4 Emergency response capabilities of site personnel
 - 4.1.5 Support required of local EMS
 - 4.1.6 Each site will determine and communicate in advance the process of supporting EMS access to site and navigation to the location of an emergency
- 4.2 Local EMS will be invited to tour the site
- 4.3 Each site will coordinate one emergency drill per calendar year with local EMS
- 4.4 Provide local EMS with emergency play and build rapport with local EMS and review applicable emergency scenarios (i.e. suspension trauma, electrical burns, etc.)

5.0 Training

- 5.1 All site personnel should review and understand site-specific emergency plan: responsible persons, roles, and contacts.
- 5.2 Site-specific emergency plan should be included in site orientation.

Page 15 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
--	---	---

ATTACHMENT 15

Hot Weather Work

1.0 Purpose

- 1.1 This procedure is designed to mitigate the risk(s) associated with working on or near WTGs during hot weather conditions.

2.0 References

- 2.1 Element 15.1 Heat Illness Prevention Plan
- 2.2 Risk assessment of heat stroke by determining heart rate:
http://libraries.ge.com/download?fileid=352315826101&entity_id=23877701101&sid=101

3.0 Overview

- 3.1 Limits will be placed on various work activities when ambient temperature(s) exceed those identified in this procedure. Limits may also be put in place as humidity increases the potential exposure to personnel.

4.0 Definitions

- 4.1 WTG: Wind Turbine Generator
- 4.2 Ambient temperature: The temperature of the air surrounding, inside, or outside of an object, in this case a WTG.
- 4.3 Nacelle temperature: The temperature displayed by the WTG nacelle thermometer
- 4.4 Heat stroke: a form of hyperthermia; an abnormally elevated body temperature with accompanying physical symptoms including changes in the nervous system function, heat stroke is a true medical emergency that is often fatal if not properly and promptly treated.
- 4.5 PPE: Personal Protective Equipment

5.0 Hot Weather Work and Restrictions

- 5.1 The level of risk will be determined by 3 variables: type of task, temperature, and humidity:
- 5.2 Type of tasks – categorize the type of work to be carried out:
- 5.2.1 Light work: testing, checks, oil changes
 - 5.2.2 Moderate work: small corrective measures, changing of small components
 - 5.2.3 Heavy work: climbing the WTG, major corrective measures, changing of rotor, generator, crown, and nacelle.
- 5.3 Temperature: value indicated by the thermometer installed inside the nacelle (T int)

Page 16 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p align="center">Health & Safety Procedure</p> <p align="center">Emergency Preparedness and Fire Prevention</p>	<p align="center">GE Renewable Energy</p> <p align="center">Onshore Wind Projects & Services Environment, Health & Safety</p>
--	---	---

5.4 Humidity: the estimation of the ambient relative humidity (weather forecast agency):

- 5.4.1 10% - 30% Low
- 5.4.2 30% - 50% Medium
- 5.4.3 50% - 70% High

5.5 Once the type of work is determined and the temperature and humidity are characterized, determine the possible existence of the risk of heat stroke, per the following classification:

Activity	Humidity	T int (°C / °F) *
Light	Low	41 / 105.8
	Medium	39 / 102.2
	High	36 / 96.8
Moderate	Low	39 / 102.2
	Medium	36 / 96.8
	High	34 / 93.2
Heavy	Low	33 / 91.4
	Medium	30 / 86
	High	28 / 82.4

5.6 In those scenarios where "T int" variable is higher than the maximum included in the above table, site EHS representatives and site leadership will evaluate the work scope and any appropriate strategies to mitigate the effects of temperature extremes based on:

- 5.6.1 Planning of the work: postpone the work until another time of the workday where the environmental conditions are not so adverse (temperature and humidity not as high), preferably first thing in the morning.
- 5.6.2 In case the activity cannot be rescheduled due to its urgency, breaks should be scheduled to reduce potential risk. The following table shows the maximum exposure times to limit the temperature increase as per the calculation for predicted heat strain in an average individual.

Activity	T int (°C / °F)	Time max (min)	Recovery time (min)
Light	36 – 41 / 96.8 – 105.8	30	5
Moderate	34 – 41 / 93.2 – 105.8	20	10
Heavy	28 – 41 / 82.4 – 105.8	15	15

- 5.6.3 No climbing (without climb assist / elevator) or heavy activity will be performed at "T int" of >42° C / 107.6° F
- 5.6.4 Only acclimatized employees are allowed to carry out activities under these circumstances.

Page 17 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	GE Renewable Energy Onshore Wind Projects & Services Environment, Health & Safety
--	---	--

5.6.4.1 Acclimatization programs will be established for new employees or employees who have been absent from work for a prolonged period. The acclimatization program can take between 7 and 14 days, so that each day the time gradually increases until reaching a full day of work.

5.7 No deviations to these limits will be allowed without a review being completed to discuss work scope, protective measures, PPE and immediate need. For Wind Field Services and Projects, this review must be completed with the Regional EHS Leader, Service Area Manager (or equivalent), Site Operations Leader and Site EHS Coordinator. The EHS Regional Leader and Service Area Manager (or equivalent) must approve the request prior to any work being conducted. For Wind Global Field Operations (Wind Projects), this review must be completed with the Regional EHS Leader, Pole Field Operations Manager, Project Manager, Site Manager, and Site EHS Manager. The Regional EHS Manager and Pole Field Operations Manager must approve the request prior to any work being conducted.

5.8 Hydration

5.8.1 Dehydration is the excessive loss of body water, producing different pathologies. It is important that workers maintain sufficient hydration at all times. This will generally be implemented through the following hydration protocol:

5.8.1.1 Intake of two (2) glasses of water before starting any work.

5.8.1.2 Continuous intake of water during the course of work (small amounts in the order of 100 to 150 mL (approx. a half cup) every 15-20 minutes).

5.8.2 The water supply should be fresh and cool. It may also be recommended to compensate for the loss of electrolytes and minerals by drinking electrolyte replacement drinks along with water. Certain medical conditions and medications can increase the risk of heat related illness, and can have an impact on recommended hydration strategies. Employees should consult their personal physician before initiating a personal hydration protocol.

5.9 Climbing Considerations

5.9.1 Do a minimum of warming-up physical exercise before climbing the WTG, to prepare the body for the activity.

5.9.2 Stop and rest every 9 meters (approx. 30 feet) (resting platform) for approximately 1 minute or more.

5.9.3 Employees will be allowed to wear light clothing (thinner layers, not flame retardant), if not exposed to open electrical cabinets or hot surfaces. See HS13.2C Electrical Service Bulletin for specific electrical uniform requirements.

6.0 Training

6.1 Personnel should recognize the environmental and workplace conditions that lead to potential heat-induced illnesses and injuries.

6.2 All employees reasonably expected to be potentially exposed to temperatures and humidity levels that reach or exceed Tint of 28°C or 82.4°F during work shall be trained on the risks and conditions that can lead to potential heat-induced illnesses and injuries.

Page 18 of 18 Document No.: HS 11B Date: March 22 nd , 2019 Revision: 14	<p style="text-align: center;">Health & Safety Procedure</p> <p style="text-align: center;">Emergency Preparedness and Fire Prevention</p>	<p style="text-align: center;">GE Renewable Energy</p> <p style="text-align: center;">Onshore Wind Projects & Services Environment, Health & Safety</p>
--	---	---

6.3 Training includes:

- 6.3.1 Annually: Extreme Temperature Awareness initial / refresher courses (GE-GBL-315 and GE-GBL-315R).
- 6.3.2 Once per season minimum: All site personnel will participate in a tailboard discussion about this procedure and the dangers of working in hot weather. The discussion should include the following:
 - 6.3.2.1 Signs and symptoms of heat-induced illnesses and injuries and what can be done to help the worker.
 - 6.3.2.2 Signs of hypothermia and dehydration
 - 6.3.2.3 Strategies to mitigate the effects of heat such as proper clothing, ventilation, access to break areas, and limiting exposure time.

7.0 Health Surveillance

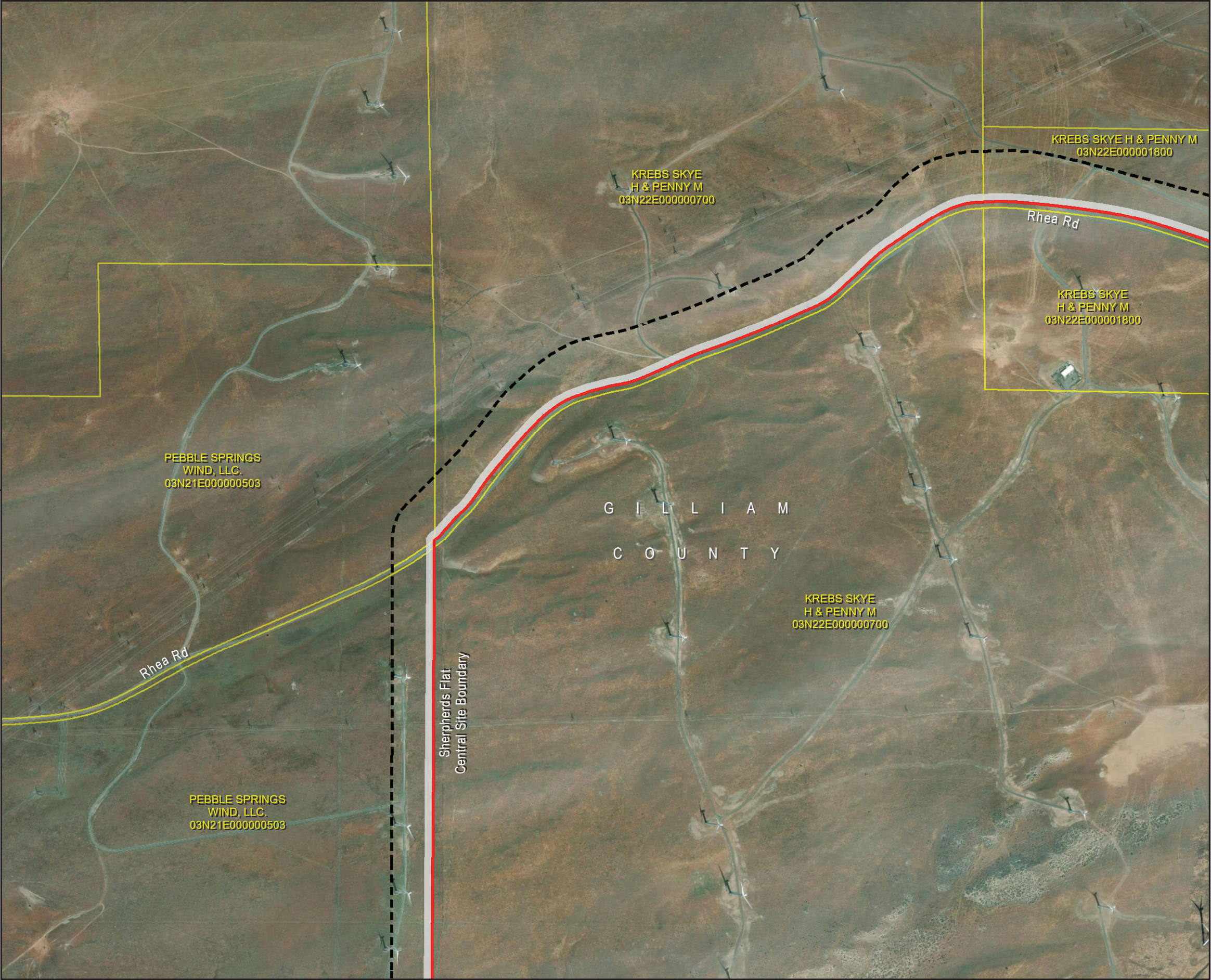
- 7.1 Specific medical tests can be conducted for the early detection of sensitivity to heat exposure for employees based in hot weather areas.
- 7.2 Employees are encouraged to maintain their physical fitness, controlled body weight, healthy diet, etc.

Attachment 6. Adjacent Property Owner Assessor's Data

This page intentionally left blank

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	Address	City	State	Zip Code
01N22E000000100				H-8 LLC	PO BOX 195	IONE	OR	97843
01N22E000000200				H-8 LLC	PO BOX 195	IONE	OR	97843
02N21E000000101	J R	KREBS			PO BOX 8	ARLINGTON	OR	97812
02N22E000000100	KIP H	KREBS	SARAH M		75398 HWY 74	IONE	OR	97843
02N22E000000200	KIP H	KREBS	SARAH M		75398 HWY 74	IONE	OR	97843
02N22E000000300				STATE OF OREGON	UNDETERMINED PARTY_ADDRESS	SALEM	OR	97310
02N22E000000500				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
02N22E000000600	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
02N22E000000601				PEBBLE SPRINGS WIND, LLC.	1125 NW COUCH ST STE 700	PORTLAND	OR	97209
02N22E000000602				PEBBLE SPRINGS WIND, LLC.	1125 NW COUCH ST STE 700	PORTLAND	OR	97209
02N22E000000700	J R	KREBS			PO BOX 8	ARLINGTON	OR	97812
02N22E000000800	J R	KREBS			PO BOX 8	ARLINGTON	OR	97812
02N22E000001001				PEBBLE SPRINGS WIND, LLC.	1125 NW COUCH ST STE 700	PORTLAND	OR	97209
02N22E000001100				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
02N22E000001200				WILLOW CREEK ENERGY LLC	ONE SOUTH WACKER DR STE 1800	CHICAGO	IL	60606
02N22E000001300	DEACON J	HEIDEMAN	ERIN E		22946 FAIRVIEW LANE	IONE	OR	97843
02N22E000001301	VIC	JANSEN			PO BOX 579	MOSES LAKE	WA	98837
02N22E000001400	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
02N22E000001500	BEN A	HAMMELMAN	KATIE L		PO BOX 65	FOSSIL	OR	97830
02N22E000001800	VIC	JANSEN			PO BOX 579	MOSES LAKE	WA	98837
02N22E000001900				WILLOW CREEK ENERGY LLC	ONE SOUTH WACKER DR STE 1800	CHICAGO	IL	60606
02N22E000002000	VIC	JANSEN			PO BOX 579	MOSES LAKE	WA	98837
02N22E000002100				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
02N22E000003700				H-8 LLC	PO BOX 195	IONE	OR	97843
02N22E000003800				GRIFFITH GEORGE G TRUSTEE	68498 HWY 74	IONE	OR	97843
03N21E000000503				PEBBLE SPRINGS WIND, LLC.	1125 NW COUCH ST STE 700	PORTLAND	OR	97209
03N22E000000700	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
03N22E000000702	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
03N22E000001800	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
03N22E000002000				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
03N22E000002100	MARTIN	MYERS			75906 THREEMILE ROAD	BOARDMAN	OR	97818
03N22E000002200	SKYE H	KREBS	PENNY M		73654 HIGHWAY 74	IONE	OR	97843
03N22E000002201				PACIFIC POWER & LIGHT CO.	825 N.E. MULTNOMAH SUITE 1900	PORTLAND	OR	97232-4107
03N22E000002202	JARROD	OGDEN	ALISON		74475 HIGHWAY 74	IONE	OR	97843
03N22E000002203	BRIAN	SULLIVAN	LORI		75181 SULLIVAN RD.	IONE	OR	97843
03N22E000002501				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754

Map Tax Lot	First Name	Last Name	Name 2	Company/Organization	Address	City	State	Zip Code
03N22E000002502				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
03N22E000003000				USA	3050 NE 3RD STREET	PRINEVILLE	OR	97754
03N22E000003601				PORTLAND GENERAL ELECTRIC CO.	121 SW SALMON ST	PORTLAND	OR	97204
01N23E000000500				NELSON, BARBARA A 1/2 ETAL	72521 TUTUILLA CREEK RD	PENDLETON	OR	97801
01N23E000000800	CLINTON H	KREBS	MAUREEN C		69956 HWY 74	IONE	OR	97843
01N23E000000900				HEIDEMAN, LOREN A, TRUSTEE ETAL	22948 FAIRVIEW LN	IONE	OR	97843
01N23E000000902	DANA L	HEIDEMAN			PO BOX 45	IONE	OR	97843
02N23E000000102				THREEMILE CANYON FARMS, LLC	75906 THREEMILE RD	BOARDMAN	OR	97818
02N23E000001600				WILLOW FARMS, LLC	PO BOX 288	WASHOUGAL	WA	98671
02N23E000001602				WILLOW FARMS, LLC	71010 HWY 74	IONE	OR	97843
02N23E000002300	CLINTON H	KREBS	MAUREEN C		69956 HWY 74	IONE	OR	97843
02N23E000002301				MILLER, APRIL, 1/2 & MILLER, LORI, 1/2	PO BOX 13519	ARLINGTON	TX	76094
02N23E000002400				WILLOW FARMS, LLC	PO BOX 288	WASHOUGAL	WA	98671
02N23E000003100				STATE OF OREGON	417 TRANSPORTATION BLDG	SALEM	OR	97310
02N23E000003200	CLINTON H	KREBS	MAUREEN C		69956 HWY 74	IONE	OR	97843
02N23E000003500				HEIDEMAN, LOREN A, TRUSTEE ETAL	22948 FAIRVIEW LN	IONE	OR	97843
02N23E000003501				JANSEN, VIC	PO BOX 579	MOSES LAKE	WA	98837
02N23E000003700	CLINTON H	KREBS	MAUREEN C		69956 HWY 74	IONE	OR	97843
02N23E000003701	CLINT	KREBS	MAUREEN		69956 HWY 74	IONE	OR	97843
02N23E000003900				MILLER, APRIL, 1/2 & MILLER, LORI, 1/2	PO BOX 13519	ARLINGTON	TX	76094



South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 1

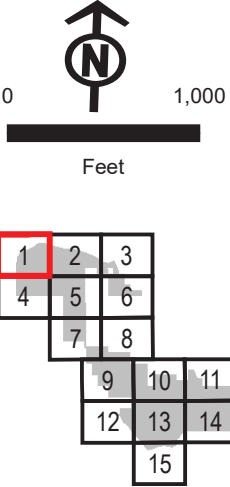
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

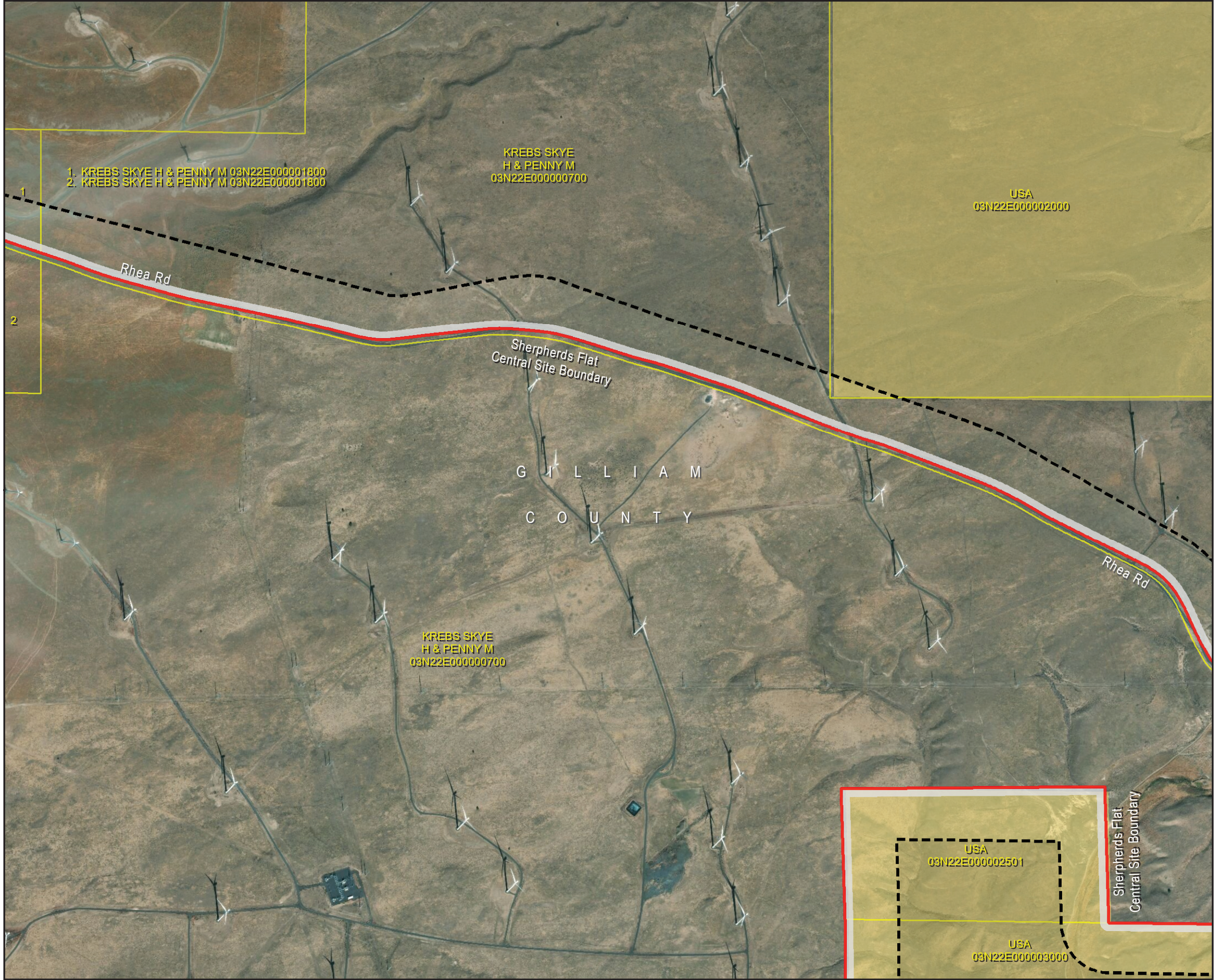
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 2

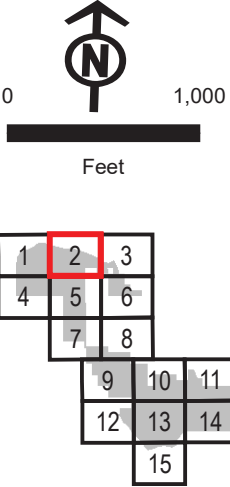
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Bureau of Land Management
 - Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

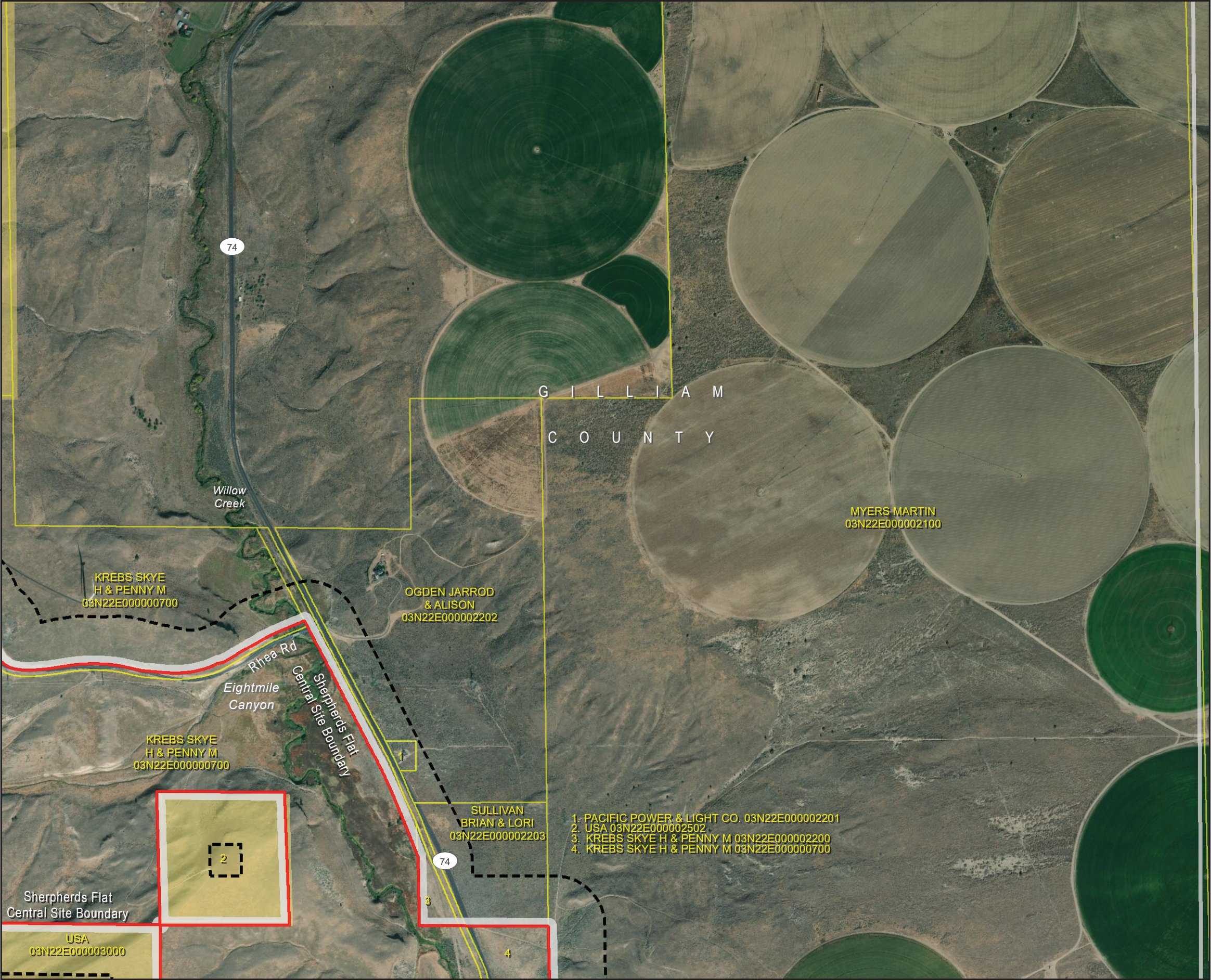
Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 3



Facilities

Shepherds Flat Central
(Site Boundary)

Property Owner Notification

Exhibit F Notification Boundary
(500-ft buffer of Site Boundary)

Parcels within Notification Area
(Owner of Record and Parcel ID)¹

Land Status

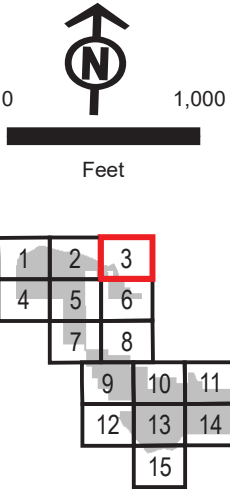
Bureau of Land Management
 Private

Notes:
Not intended for construction, or other uses
beyond intended purpose.

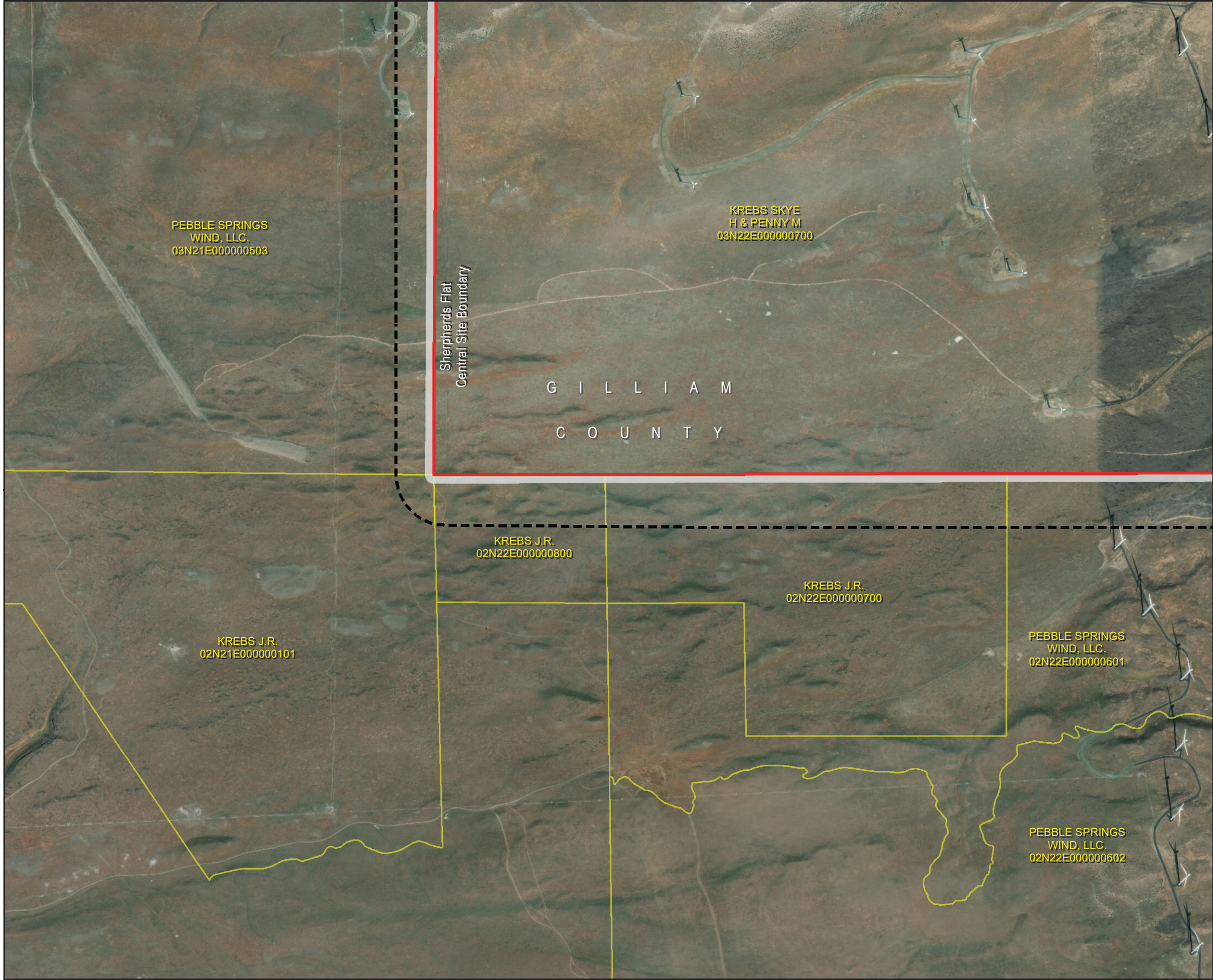
^{1/1} Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow
County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS,
AeroGRID, IGN, and the GIS User Community



CAITHNESS



South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 4

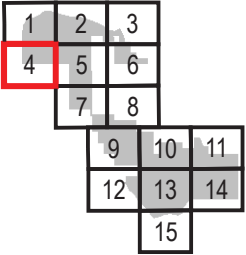
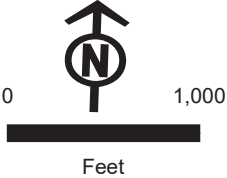
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

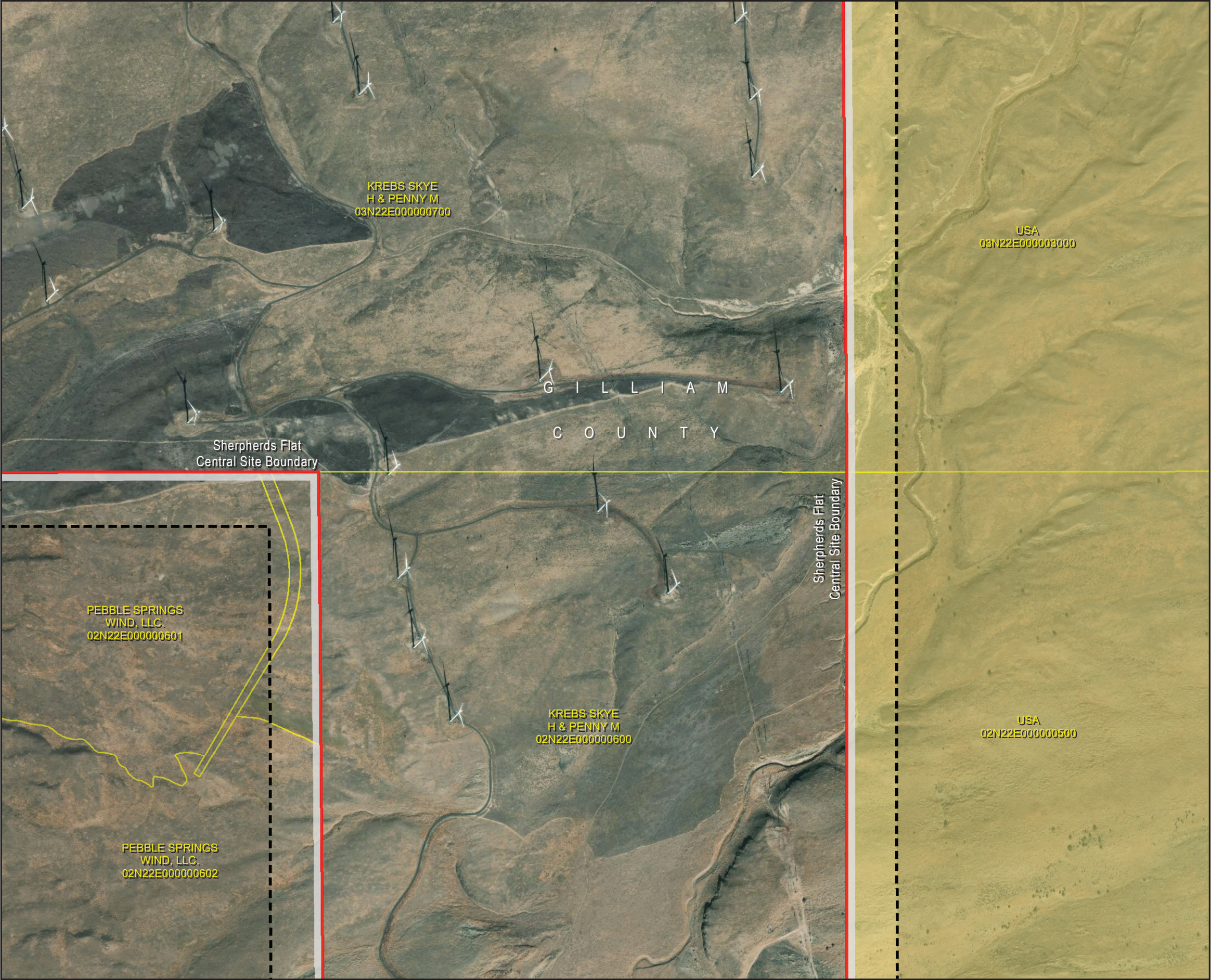
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 5

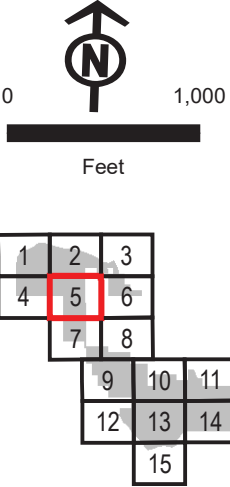
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Bureau of Land Management
 - Private

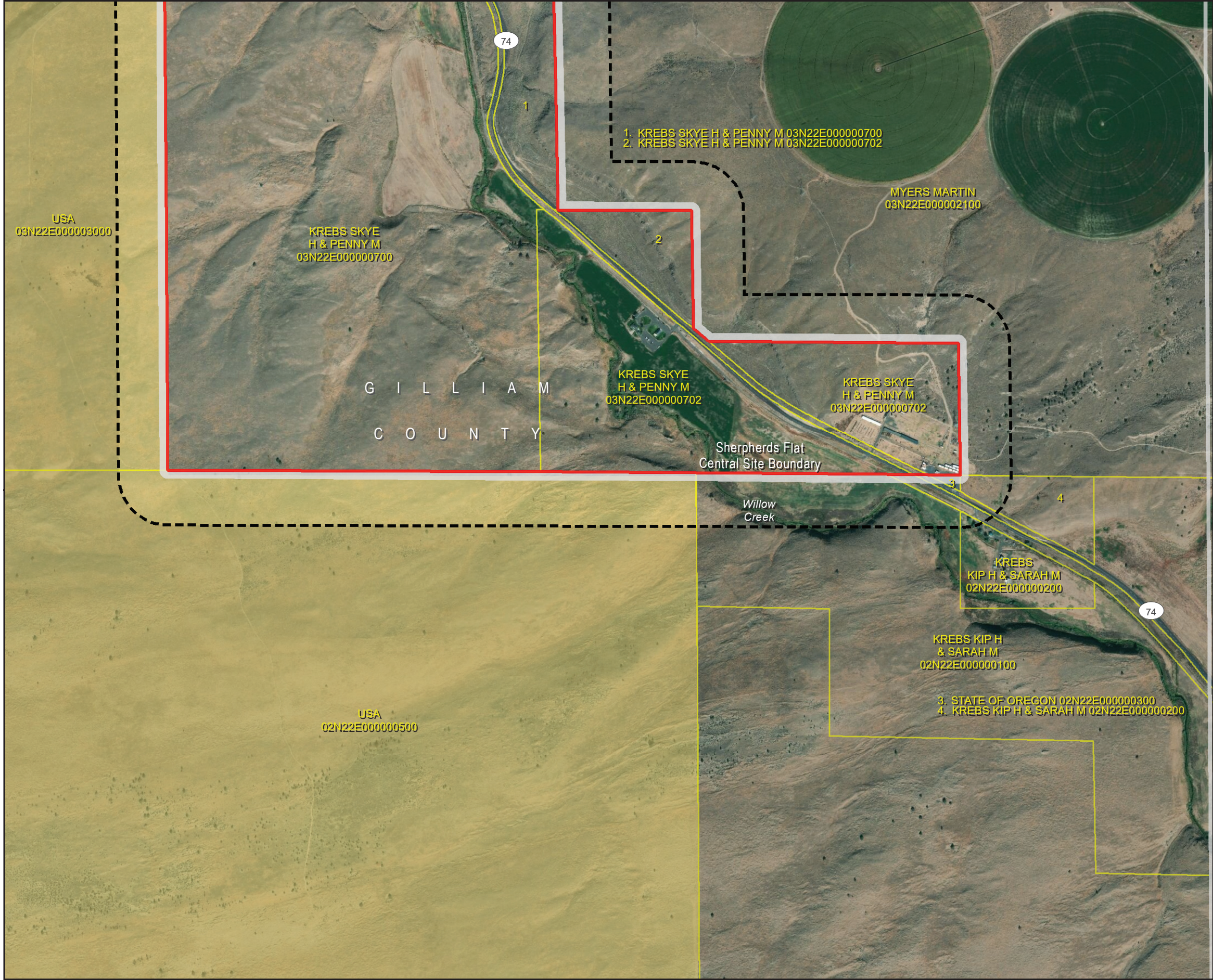
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 6

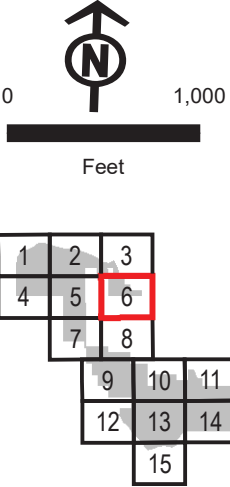
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Bureau of Land Management
 - Private

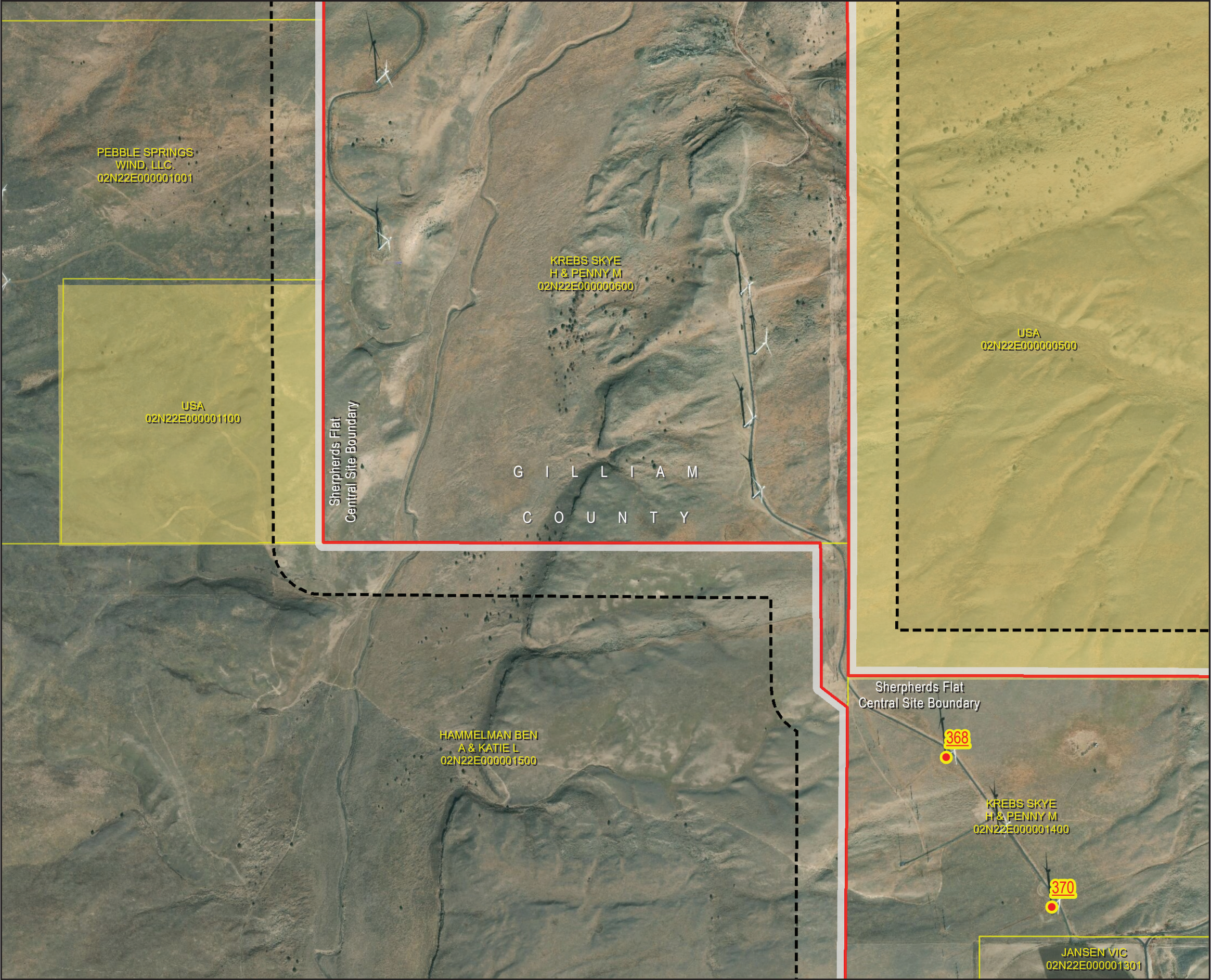
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 7

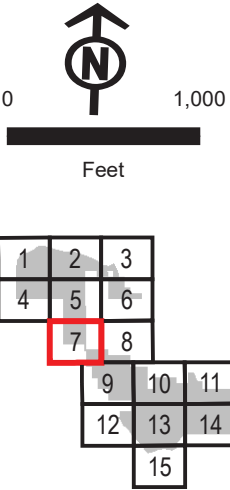
- Facilities
- Shepherds Flat Central (Site Boundary)
 - Demonstration Turbines
- Property Owner Notification
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status
- Bureau of Land Management
 - Private

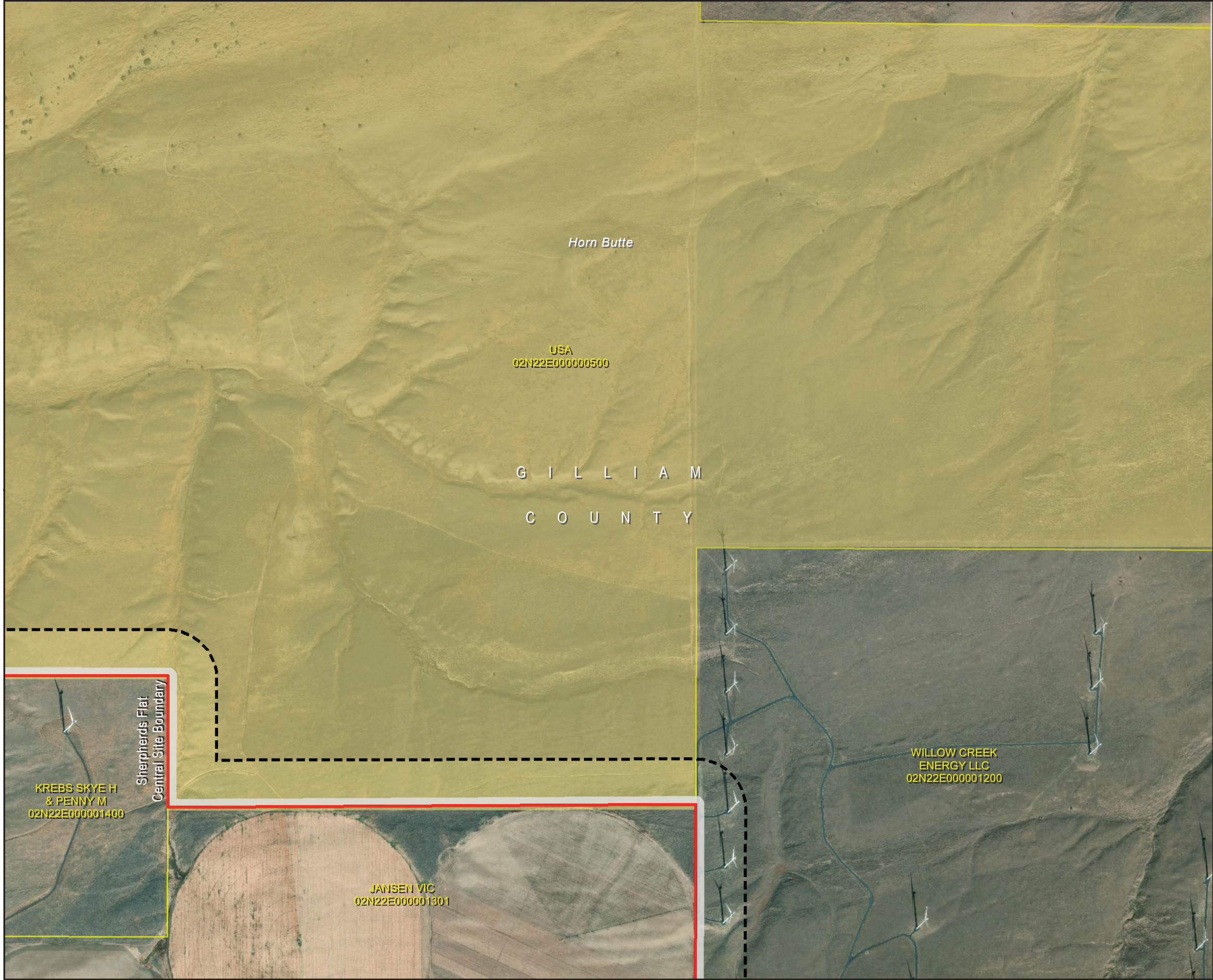
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 8

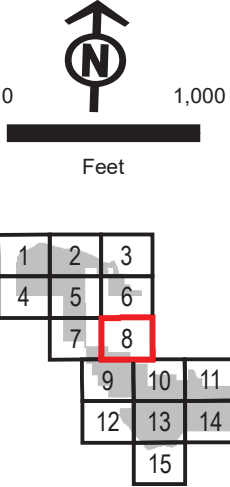
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Bureau of Land Management
 - Private

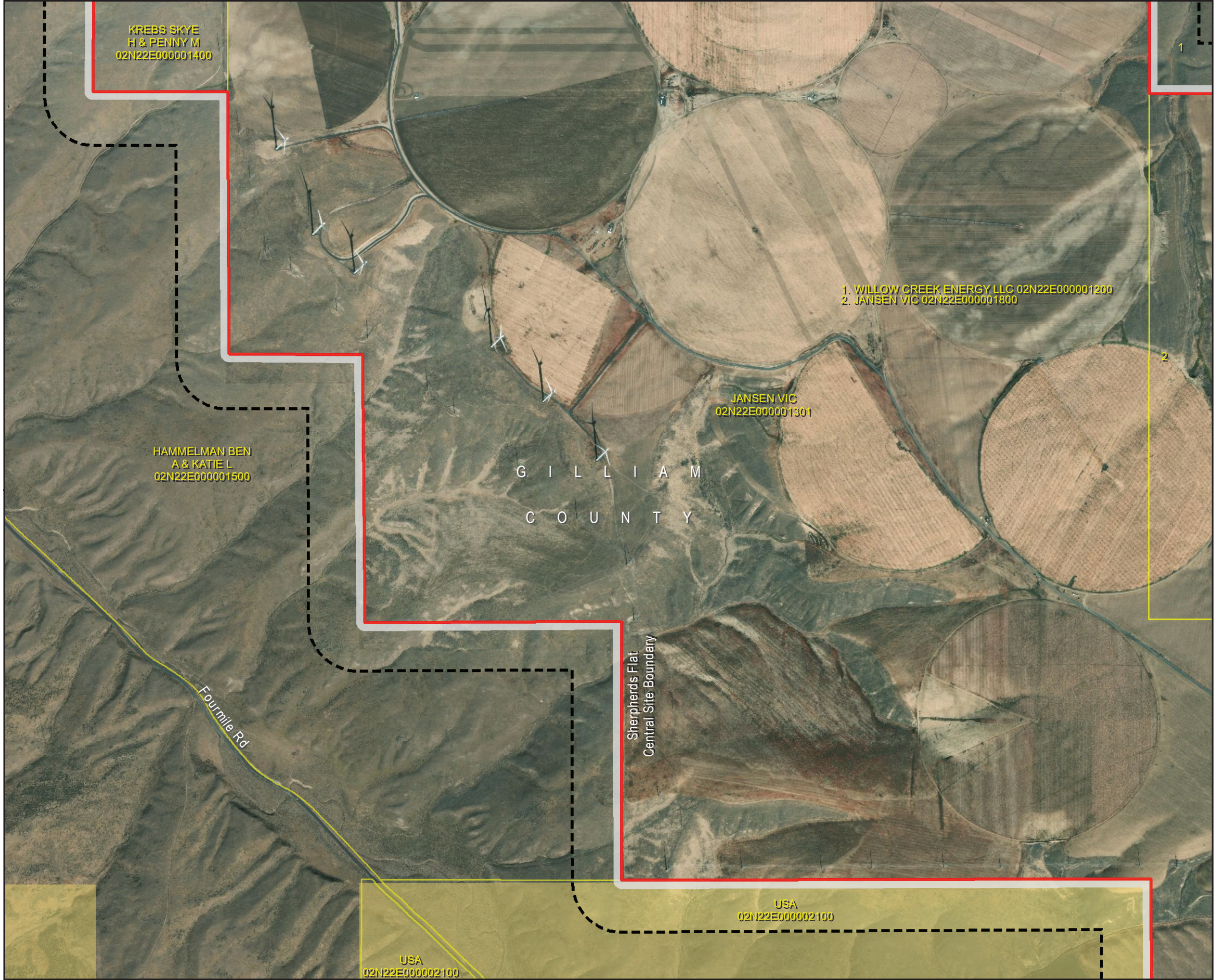
Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 9

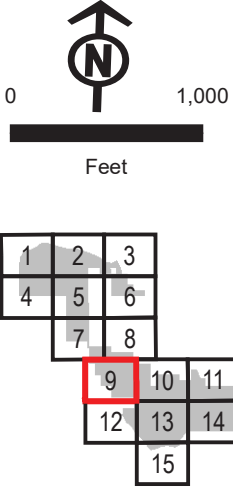
- Facilities
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status
- Bureau of Land Management
 - Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam and Morrow County

Map 10

Facilities

Shepherds Flat Central
(Site Boundary)

Property Owner Notification

Exhibit F Notification Boundary
(500-ft buffer of Site Boundary)

Parcels within Notification Area
(Owner of Record and Parcel ID)¹

Land Status

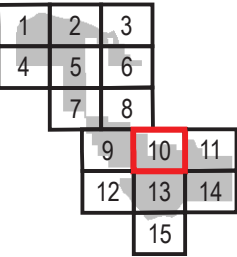
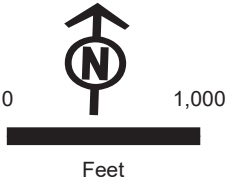
Private

Notes:
Not intended for construction, or other uses
beyond intended purpose.

^{1/1} Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow
County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS,
AeroGRID, IGN, and the GIS User Community



CAITHNESS



South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Morrow County
Map 11

- Facilities**
- Shepherd's Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

- 1. WILLOW FARMS, LLC 02N23E000001602
- 2. WILLOW FARMS, LLC 02N23E000001600
- 3. WILLOW FARMS, LLC 02N23E000001600
- 4. WILLOW FARMS, LLC 02N23E000002400
- 5. MILLER, APRIL, 1/2 & MILLER, LORI, 1/2 02N23E000002301
- 6. STATE OF OREGON 02N23E000003100

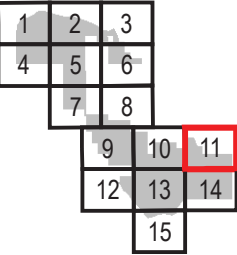
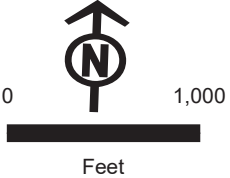
M O R R O W
C O U N T Y

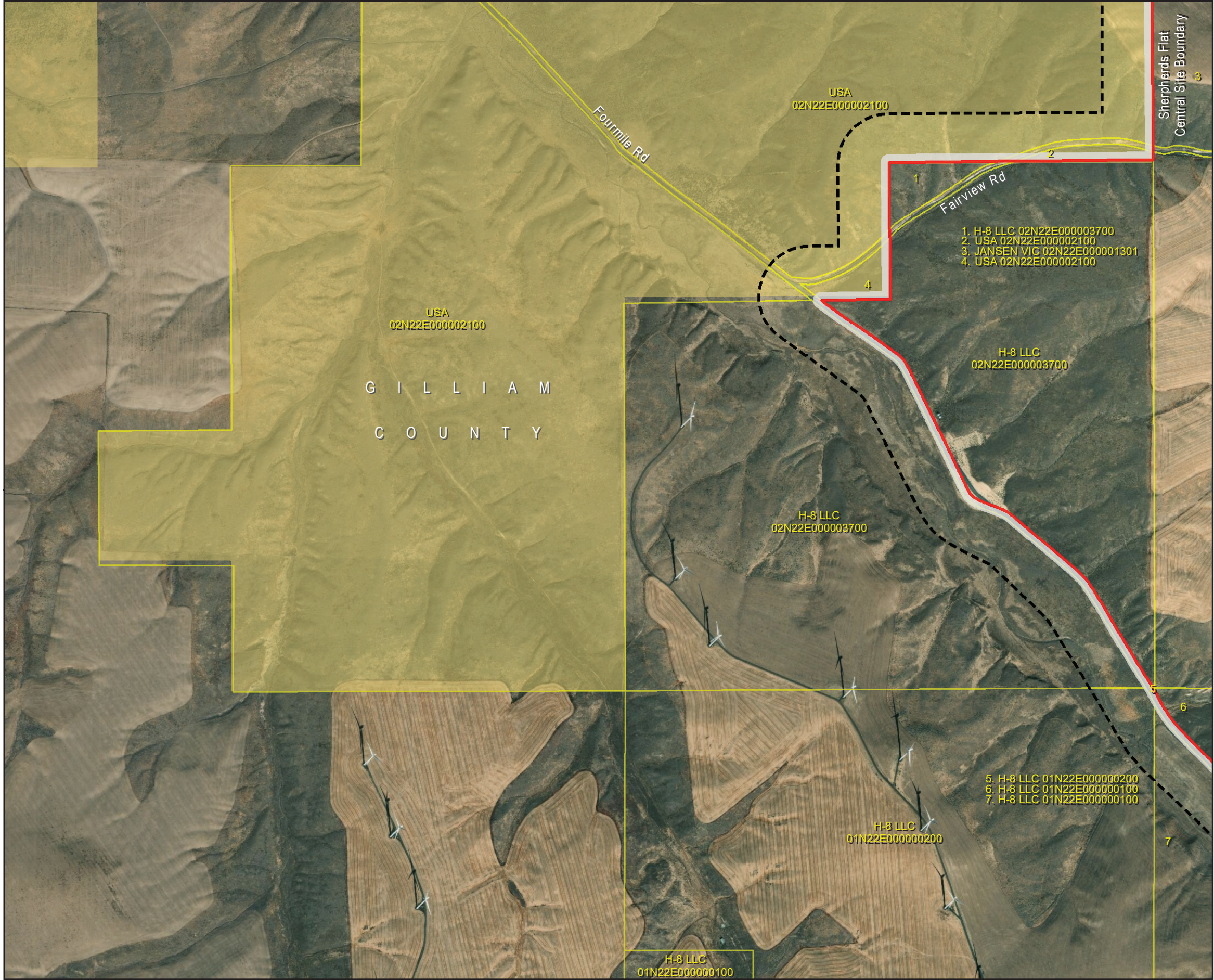
Notes:
Not intended for construction, or other uses beyond intended purpose.

^{1/1} Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherd's Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam County
Map 12

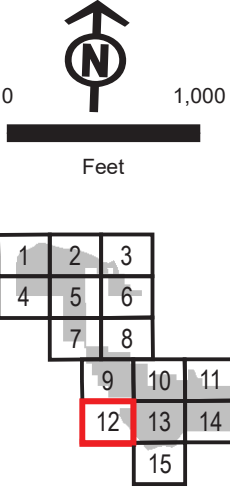
- Facilities**
- Shepherd's Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Bureau of Land Management
 - Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam and Morrow County
Map 13

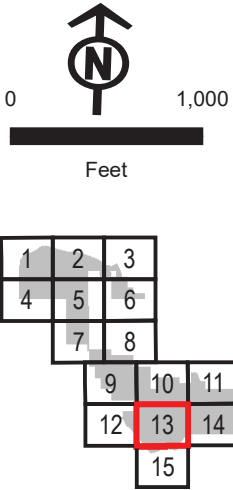
- Facilities**
- Shepherds Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





South Hurlburt Wind, LLC
Shepherds Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Morrow County
Map 14

- Facilities**
- Shepherd's Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 1,000
Feet

1	2	3	
4	5	6	
	7	8	
	9	10	11
	12	13	14
		15	



South Hurlburt Wind, LLC
Shepherd's Flat Central
Request For Amendment #2
Gilliam County, Oregon

Exhibit F
Property Owners of Record

Gilliam and Morrow County
Map 15

- Facilities**
- Shepherd's Flat Central (Site Boundary)
- Property Owner Notification**
- Exhibit F Notification Boundary (500-ft buffer of Site Boundary)
 - Parcels within Notification Area (Owner of Record and Parcel ID)¹
- Land Status**
- Private

Notes:
Not intended for construction, or other uses beyond intended purpose.

¹ Parcel data current as of July 2019.

Data Source(s):
BLM, Esri, Gilliam County Assessor, Morrow County Assessor, StreamNet, USGS

Base Map:
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

