Shepherds Flat Central Request for Amendment 2: Draft Proposed Order

To:	Oregon Energy Facility Siting Council
From:	Chase McVeigh-Walker, Senior Siting Analyst
Date:	September 24, 2019
Re:	Draft Proposed Order on Request for Amendment 2

Certificate Holder:	South Hurlburt Wind, LLC, a wholly owned subsidiary of Caithness Energy, LLC, a subsidiary of Caithness Equities Corporation.
Approved Facility:	Operational wind energy generation facility with 116 wind turbines and a maximum generating capacity of 290 megawatts. The facility is located within a site boundary of approximately 11,769 acres in Gilliam and Morrow counties.
Proposed Amendment:	Amend Condition 26 to lower minimum aboveground blade tip clearance for two wind turbines from 25 to 21.5 meters based on proposed operations and maintenance (O&M) demonstration activity that would replace wind turbine blades and modify nacelles.
Proposed Location:	Two wind turbines that are the subject of the amendment request located in Gilliam County.
Staff Recommendation:	Approval of Request for Amendment 2 of Site Certificate

Summary
To issue an amended site certificate, the Energy Facility Siting Council (EFSC or the Council) must find that a request for amendment to the site certificate demonstrates that the facility, with proposed changes, satisfies, or with conditions can satisfy, each of the applicable EFSC Siting Standards set forth in Oregon Administrative Rule (OAR) Chapter 345, Divisions 22 through 24, as well as all other Oregon statutes and administrative rules applicable to the facility with proposed changes.

The amendment request is being reviewed under the Type B review process (OAR Chapter 345 Division 27). As staff to EFSC, the Oregon Department of Energy (ODOE or the Department) reviewed Request for Amendment 2 to the Shepherds Flat Central site certificate, in consultation with specifically identified state and local reviewing agencies. The amendment request seeks approval to amend Condition 26 to lower minimum aboveground blade tip clearance for two wind turbines from 25 to 21.5 meters based on a proposed operations and maintenance (O&M) demonstration activity that would replace wind turbine blades and modify nacelles. Based upon its review of the amendment request, the Department recommends Council issue a second amended site certificate for the facility, subject to the existing and recommended amended and new site certificate conditions set forth in the following draft proposed order. The analysis and recommendations contained in this draft proposed order are not a final determination.

A public comment period is now open on the draft proposed order and complete amendment request. The comment deadline for written comments to be submitted to the Department is October 15, 2019 by 5:00 p.m. PST. Section II.B., *Amendment Review Process* of the draft proposed order contains additional information regarding the site certificate amendment review process. The public notice associated with the release of this draft proposed order also contains additional information regarding the comment period and next steps in the EFSC review process.

BEFORE THE
ENERGY FACILITY SITING COUNCIL
OF THE STATE OF OREGON

In the Matter of Request for Amendment 2 for the Shepherds Flat Central Site Certificate	))))	DRAFT PROPOSED ORDER ON REQUEST FOR AMENDMENT 2 TO THE SITE CERTIFICATE

September 24, 2019

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I. INTRODUCTION

The Oregon Department of Energy (Department or ODOE) issues this draft proposed order, in accordance with Oregon Revised Statute (ORS) 469.405(1) and Oregon Administrative Rule (OAR) 345-027-0365, based on its review of Request for Amendment 2 (RFA2) to the Shepherds Flat Central site certificate, as well as comments and recommendations received by specific state agencies and local governments during review of the preliminary amendment request. The certificate holder for the facility is South Hurlburt Wind, LLC (certificate holder), a wholly owned subsidiary of Caithness Energy, LLC, a subsidiary of Caithness Equities Corporation.

The certificate holder requests approval from the Energy Facility Siting Council (EFSC or Council) to amend Condition 26 to lower minimum aboveground blade tip clearance for two wind turbines (T368 and T370) from 25 to 21.5 meters based on a proposed operations and maintenance (O&M) demonstration activity that would replace wind turbine blades and modify nacelles.[1]

Based upon review of this amendment request, in conjunction with comments and recommendations received by state agencies and local government entities, the Department recommends that the Council approve and grant an amendment to the Shepherds Flat Central site certificate subject to the existing and recommended amended conditions set forth in this order.

I.A. Name and Address of Certificate Holder

South Hurlburt Wind, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017

Parent Company of the Certificate Holder

Caithness Energy, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017

[1] The proposed O&M demonstration activity would result in a change in wind turbine blade tip height from 135 to 150 feet. However, existing site certificate Condition 26 authorizes a maximum blade tip height of 150 feet, based on representations in the Application for Site Certificate (ASC); therefore, Council previously reviewed and authorized these impacts in the 2008 Final Order on ASC and therefore are not further evaluated in this order.

Certificate Holder Contact

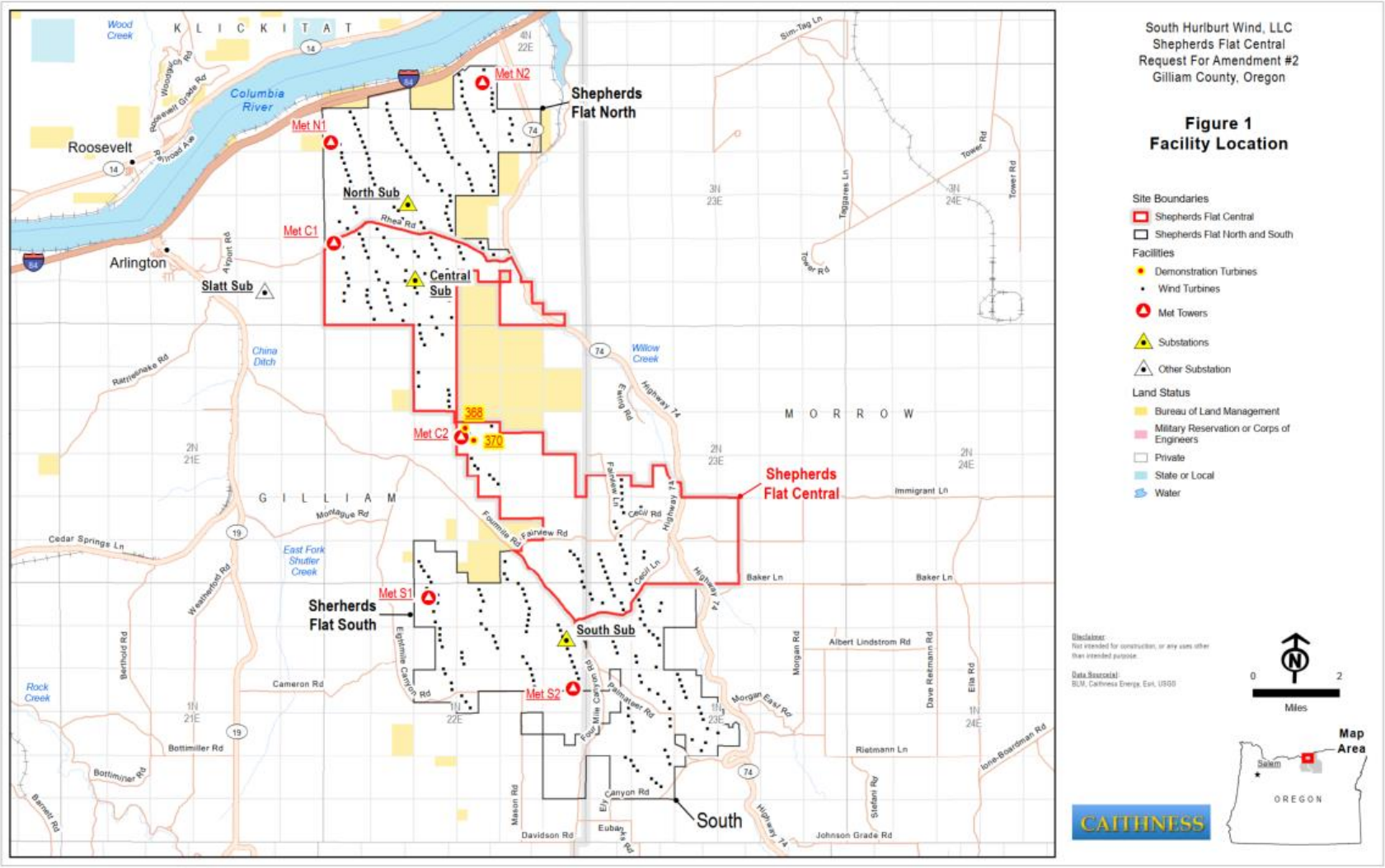
Derrel A. Grant
South Hurlburt Wind, LLC
c/o Caithness Energy, LLC
565 Fifth Avenue, 29th Floor
New York, NY 10017

I.B. Description of the Approved Facility and Facility Location

Shepherds Flat Central is a wind energy facility with approximately 116 wind turbines and a maximum generating capacity of 290 megawatts. The facility includes a 34.5 kV electrical collection system, a collector substation, a 230 kV interconnection transmission line, two meteorological towers, a field workshop, supervisory control and data acquisition system, and access roads.

As presented in Figure 1: *Facility Regional Location* below, the facility is located within a site boundary of approximately 11,769 acres, south of Interstate Highway 84, between State Highway 19 and 74 in Gilliam and Morrow Counties.

1 **Figure 1: Facility Regional Location**



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I.C. Procedural History

The Council approved a site certificate for the Shepherds Flat Wind Facility on July 25, 2008, authorizing construction and operation of a 909 MW wind energy generation facility. The Council issued the First Amended Site Certificate on March 12, 2010, authorizing an expansion of the site boundary to accommodate an alternative route for the transmission line and also divided and transferred the Shepherds Flat Wind Facility into three independent facilities - Shepherds Flat North, Shepherds Flat Central, and Shepherds Flat South.

The procedural history of Request for Amendment 2 (RFA2 or amendment request) is described in Section II.B. *Amendment Review Process* of this order.

II. AMENDMENT PROCESS

II.A. Requested Amendment

The certificate holder requests Council approval to amend site certificate Condition 26, authorizing a lower minimum aboveground wind turbine blade tip clearance, from 25 to 21.5 meters, for two specific wind turbines (T368 and T370) based on a proposed Operations and Maintenance (O&M) demonstration activity that would replace wind turbine blades and modify nacelles.

The certificate holder requests that the proposed change be evaluated as an O&M activity and not as a construction activity. To support the Council's review of this request, the certificate holder describes that the proposed O&M demonstration activity would include up to 10 workers, 1 crane, 12 semi-trucks and 6 to 10 pick-up trucks, similar to typical O&M activities at the facility site. The proposed O&M demonstration activity would generally include the following:

- New blades, gearbox, hub and miscellaneous electrical equipment would be delivered onsite on semi-trucks.
- Crane would be delivered to the first wind turbine site.
- Crane would be assembled and existing rotor would be removed in one lift.
- Wind turbine parts would be removed and truck out by semi-trucks along existing roads.
- The crane would then crawl slowly to the second wind turbine site
- The turbine disassembly process would be repeated followed by the assembly process.
- The new rotor would be assembled on the ground and lifted as a unit.
- The crane would then walk slowly back to the first wind turbine site.
- The crane would then be disassembled and trucked out on existing roads.

The certificate holder asserts that this level and type of activity is consistent with routine O&M activity at the facility. Based on review of the number of personnel, equipment and duration (approximately 2 weeks), the Department concurs that the proposed O&M demonstration activity would be consistent with routine O&M activities at the facility. Therefore, this order presents the Department's analysis of potential operational impacts from the lowering of the minimum aboveground blade-tip clearance and focuses on standards and regulatory requirements considered applicable to the proposed change. For organizational purposes, the order presents an impact assessment in Section III.A for standards the Department identifies as likely to be impacted, and an applicability assessment in Section III.B for standards the Department identifies as not likely to be impacted by the proposed change.

II.B. Amendment Review Process

Council rules describe the processes for transfers, Type A, Type B, and Type C review of a request for amendment at OAR 345-027-0351. The Type A review is the standard or "default" site certificate amendment process for changes that require an amendment. Type C review process is associated with construction-related changes. The key procedural difference between the Type A and Type B review is that the Type A review includes a public hearing on the draft proposed order and an opportunity for a contested case proceeding. The primary timing differences between Type A and Type B review are the maximum allowed timelines for the Department's determination of completeness of the preliminary request for amendment, as well as the issuance of the draft proposed order, and proposed order. It is important to note that Council rules authorize the Department to adjust the timelines for these specific procedural requirements, if necessary.

A certificate holder may submit an amendment determination request to the Department for a written determination of whether a request for amendment justifies review under the Type B review process. The certificate holder has the burden of justifying the appropriateness of the Type B review process as described in OAR 345-027-0351(3). The Department may consider, but is not limited to, the factors identified in OAR 345-027-0357(8) when determining whether to process an amendment request under Type B review.

On August 26, 2019, the certificate holder submitted a Type B Review amendment determination request (Type B Review ADR), requesting the Department's review and determination of whether, based on evaluation of the OAR 345-027-0357(8) factors, the amendment request could be reviewed under the Type B review process. On September 5, 2019, the Department determined that Request for Amendment 2 of the Shepherds Flat Central Site Certificate justifies Type B review, based on the low level of complexity, the limited level of interest in the proposed changes anticipated by the Department, and the low likelihood of significant adverse impacts or additional mitigation from the proposed change.

Pursuant to OAR 345-027-0363(2), on September 10, 2019, the Department determined pRFA2 to be incomplete and issued requests for additional information.[2] The certificate holder provided responses to the information request on September 17, 2019. After reviewing the responses to its information request, on September 19, 2019, the Department determined the RFA to be complete. Under OAR 345-027-0363(5), an RFA is complete when the Department finds that a certificate holder has submitted information adequate for the Council to make findings or impose conditions for all applicable laws and Council standards. The certificate holder submitted a complete RFA2 on September 23, 2019, which was then posted on September 24, 2019 to the Department's project website with an announcement notifying the public that the complete RFA had been received and is available for viewing.

Reviewing Agency Comments on Preliminary Request for Amendment 2

As presented in Attachment B of this order, the Department received comments on pRFA2 from the Oregon Department of Fish and Wildlife.

II.C. Council Review Process

On September 24, 2019, the Department issued this draft proposed order, and a notice of comment period on RFA2 and the draft proposed order (notice). The notice was distributed to all persons on the Council's general mailing list, to the special mailing list established for the facility, to an updated list of property owners supplied by the certificate holder, and to a list of reviewing agencies as defined in OAR 345-001-0010(52).

To raise an issue on the record of the draft proposed order, a person must raise the issue in a written comment submitted after the date of the notice of the draft proposed order received by the Department before the written comment deadline. The Council will not accept or consider public comments on RFA2 or on the draft proposed order after the written comment deadline, listed above, that closes the record on the draft proposed order. After the Department considers all comments received before the comment deadline for the draft proposed order, but not more than 21 days after the comment deadline, the Department will issue a proposed order. The proposed order shall recommend approval, modification, or denial of the second amended site certificate. Upon issuance of the proposed order, the Department will issue a notice of the proposed order.

The Council, may adopt, modify or reject the proposed order based on the considerations described in OAR 345-027-0375. In a written final order, the Council shall either grant or deny issuance of an amended site certificate. In making a decision to grant or deny issuance of an amended site certificate, the Council shall apply the applicable laws and Council standards required under OAR 345-027-0375 and in effect on the dates described in OAR 345-027-0375 (3). The Council's final order is subject to judicial review by the Oregon Supreme Court as provided in ORS 469.403.

[2] SFCAMD2 Completeness Determination and RAI 2019-09-10.

II.D. Applicable Division 27 Rule Requirements

A site certificate amendment is necessary under OAR 345-027-0350(4) because the certificate holder requests to design, construct, and operate the facility in a manner different from the description in the site certificate, and the proposed change would impair the certificate holder's ability to comply with a site certificate condition, and would require new conditions or modification to existing conditions in the site certificate.

The Type B amendment review process (consisting of rules 345-027-0359, -0360, -0363, -0365, -0368, -0372, and -0375) shall apply to the Council's review of a request for amendment that the Department or the Council approves for Type B review under 345-027-0357.

III. REVIEW OF THE REQUESTED AMENDMENT

Under ORS 469.310, the Council is charged with ensuring that the "siting, construction and operation of energy facilities shall be accomplished in a manner consistent with protection of the public health and safety." ORS 469.401(2) further provides that the Council must include in the amended site certificate "conditions for the protection of the public health and safety, for the time for completion of construction, and to ensure compliance with the standards, statutes and rules described in ORS 469.501 and ORS 469.503."[3] The Council implements this statutory framework by adopting findings of fact, conclusions of law, and conditions of approval concerning the amended facility's compliance with the Council's Standards for Siting Facilities at OAR 345, Divisions 22, 24, 26, and 27.

This draft proposed order includes the Department's initial analysis of whether the changes proposed in RFA2, proposed O&M demonstration activity for two specific wind turbines, meet each applicable Council Standard (with mitigation and subject to compliance with recommended conditions, as applicable), based on the information in the record. Following the written comment period on the draft proposed order, the Department will issue its proposed order, which will include the Department's consideration of the comments and any additional evidence received on the record of the draft proposed order.

III.A. Standards Potentially Impacted by Request for Amendment 2

III.A.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 ORS 469.570 and 469.590 to 469.619, and the standards

[3] ORS 469.401(2).

adopted by the Council pursuant to ORS 469.501 or the overall public benefits of the facility outweigh the damage to the resources protected by the 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 requirement of the Council statutes if other agencies have special expertise, the Department of Energy shall consult 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.

Findings of Fact

OAR 345-022-0000 provides the Council's General Standard of Review and requires the Council to find that a preponderance of evidence on the record supports the conclusion that the proposed O&M demonstration activity would comply with the requirements of EFSC statutes and the siting standards adopted by the Council and that the proposed O&M demonstration activity would comply with all other Oregon statutes and administrative rules applicable to the issuance of an amended site certificate for the facility.

To support the evaluation under OAR 345-022-0000(1), the Department consulted with other state agencies and both Gilliam and Morrow Counties during review of pRFA2 to aid in the evaluation of whether the proposed O&M demonstration activity would maintain compliance with statutes, rules and ordinances otherwise administered by other agencies. Additionally, in many circumstances the Department relies upon these reviewing agencies' special expertise in evaluating compliance with the requirements of Council standards. As presented in this order, the Department recommends Council find that the proposed O&M demonstration activity would not impact the certificate holder's ability to maintain compliance with applicable Council standards and other applicable Oregon statutes and administrative rules, as identified int his order.

OAR 345-022-0000(2) and (3) apply to RFAs where a certificate holder has shown that the proposed facility modifications cannot meet Council standards or has shown that there is no reasonable way to meet the Council standards through mitigation or avoidance of the damage

to protected resources; and, for those instances, establish criteria for the Council to evaluate in making a balancing determination. In RFA2, the certificate holder has not represented that the proposed amendments cannot meet an applicable Council standard. Therefore, OAR 345-022-0000(2) and (3) would not apply to this review.

Mandatory and Site-Specific Conditions in Site Certificates [OAR 345-025-0006 and OAR 345-025-0010]

OAR 345-025-0006 lists certain mandatory conditions that the Council must adopt in every site certificate. The Council's October 2017 rule changes moved the mandatory conditions from Division 27 to Division 25. As such, the Department recommends Council impose new mandatory conditions for the proposed RFA2 facility modifications, using the language and citations consistent with the October 2017 rule change, as presented in draft amended site certificate and provided in Attachment A of this order.

Council previously imposed Condition 26 to align with OAR 345-025-0006(3)(a), which requires that the certificate holder design, construct, operate, and retire the facility substantially as described in the ASC. In this condition, Council previously established wind turbine dimension specifications associated with an impact evaluated under a Council standard, such as maximum blade tip height which is associated with visual impacts, and minimum aboveground blade tip clearance which is associated with health and safety impacts. As described in Section II.A. *Requested Amendment*, the certificate holder requests Council approval to amend Condition 26 to authorize a lower minimum aboveground blade tip clearance, from 25 to 21.5 meters, for two specific wind turbines (T368 and T370). Because this proposed change is evaluated as a potential public health and safety impact, the Department evaluation of the requested amended section is presented in Section III.A.7.1 *Public Health and Safety Standards for Wind Energy Facilities* of this order.

Construction and Operation Rules for Facilities [OAR Chapter 345, Division 26]

The Council has adopted rules at OAR Chapter 345, Division 26 to ensure that construction, operation, and retirement of facilities are accomplished in a manner consistent with the protection of the public health, safety, and welfare and protection of the environment. These rules include requirements for compliance plans, inspections, reporting and notification of incidents. Pursuant to OAR 345-026-0080, a certificate holder is obligated to report to the Department on facility status and operational experience. Because the proposed O&M demonstration activity does not warrant imposing construction commencement and completion deadlines, and consistent with the facility's general operational reporting requirements, the Department recommends Council impose Condition 104 to specify that the status of the proposed O&M demonstration activity be reported to allow the Department the ability to track activities and applicable requirements for the activity, as follows:

> **Recommended Condition 104:** After January 1 but no later than April 30 of the year after completion of the Operations and Maintenance demonstration activity for wind turbines

368 and 370, as approved in RFA2, the certificate holder shall include in its Annual Report an activity and operational status summary of the repowered wind turbines. [OAR 345-026-0080(2)(a); AMD2]

Conclusions of Law

Based on the foregoing findings of fact and conclusions of law, and subject to compliance with the recommended condition, the Department recommends that the Council find that the certificate holder would satisfy the requirements of OAR 345-022-0000.

III.A.2 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;

(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.

Findings of Fact

As provided in section (1) above, the Structural Standard generally requires the Council to evaluate whether the applicant (certificate holder) has adequately characterized the potential seismic, geological and soil hazards of the site, and that the applicant (certificate holder) can design, engineer and construct the facility to avoid dangers to human safety from these hazards.[4] Pursuant to OAR 345-022-0020(2), the Council may issue a site certificate for a wind energy facility without making findings regarding compliance with the Structural Standard; however, the Council may apply the requirements of the standard to impose site certificate conditions.

In accordance with the informational requirements established in OAR 345-021-0010(1)(g)(B), the certificate holder completed consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI) on August 20, 2019 to discuss the scope of the proposed O&M demonstration activity and appropriate level of seismic and non-seismic impact evaluation. During consultation, Yumei Yang, DOGAMI staff requested information on how seismic ground motions that exceed the building code response spectrum would be addressed and requested disaster resilience and future climate change be addressed.

Potential Seismic, Geological and Soil Hazards

In RFA2, in response to the DOGAMI consultation, the certificate holder explains that 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. The Seismic Hazard Assessment was conducted as part of the original ASC (Shannon & Wilson, Inc. 2007). Given adequate seismic design, the potential impacts of long-period ground motions are not expected to impact the proposed O&M demonstration activity.

Design, Engineer and Construct Facility to Avoid Dangers to Human Safety from Seismic and Non-Seismic Hazards

The proposed O&M demonstration activity would include the removal and replacement of existing turbine blades with longer blades, and the replacement and modification to associated machinery including the rotor upgrade (replacing the hub casting), modification to existing nacelles roof, and installation of a new gearbox and bedplate in the nacelle for two specific wind turbines (T368 and T370). The existing turbine foundation and tower would remain in place. To demonstrate that the proposed O&M demonstration activity would be designed, engineered and constructed to avoid dangers to human safety from seismic and non-seismic hazards, the certificate holder utilized a professional, licensed engineer, RRC Power & Energy,

[4] OAR 345-022-0020(3) does not apply to the facility, with proposed changes, because it is a not a special criteria facility under OAR 345-015-0310.

LLC (RRC), to prepare a detailed structural evaluation of the existing foundations of wind turbines 368 and 370.[5] The evaluation was conducted by calculation only and did not include a physical inspection or condition assessment of the existing foundations. The evaluation includes data, methods, assumptions, and results and includes detailed information about tower structure and the various forces that are applied to the foundation, bolts, flanges, etc. to support the tower under a wide range of potential conditions at the site.

In general, the engineering analysis confirmed that the current foundations have an adequate factor of safety for the standard modes of failure relating to bearing capacity, and also addresses relevant seismic factors of safety. The evaluation did identify, however, that the pull-out fatigue check failed for the potential increased turbine loads, based on representative fatigue loads for a GE 2.75 MW wind turbine compared to the existing GE 2.5 MW wind turbines. RRC explains that the 0.33 limit requirement for new construction is based on reinforcement that can't be inspected, rather than the reinforcement failing if it reaches a ratio of 0.33. The foundation analysis concludes that the risk of proposed O&M demonstration activity, with respect to the foundations is relatively low; however, the analysis also recommends a long-term inspection program to observe the foundations for warning signs as the foundations age under the new load. If inspections and observations show signs of damage or that the foundations may be losing strength capacity, RRC indicates that 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. Based on the recommendations made in RRC's visual inspection report and as provided in RFA2 Attachment 3 Foundation Analysis, the Department recommends that Council impose the following condition to address foundation crack issues identified at wind turbine 368 and potential load fatigue issues at wind turbines 368 and 370:

Recommended Condition 105: Following completion of the O&M demonstration activity at wind turbines 368 and 370, as approved in RFA2, the certificate holder shall implement an ongoing inspection, monitoring and remediation program as follows:

(a) Submit to the Department a copy of an appropriate foundation inspection plan that specifies timing, frequency and methodology for evaluation of wind turbine foundation integrity, fatigue stress and other design checks, as recommended by the wind turbine manufacturer.

(b) Within five months of completion of the O&M demonstration activity at wind turbine 368, the certificate holder must complete a crack depth investigation or other testing such as coring to verify if the foundation cracks are surface or deep cracks. The certificate holder shall submit to the Department and DOGAMI the results of the crack depth investigation, remediation recommendations, and remediation schedule.

(c) Wind turbine 368 shall not be operated more than five months after the O&M demonstration activity unless the remediation actions are implemented per the investigation report referenced in (b), unless, based on the findings of the investigation

[5] The RRC evaluation was included as Attachment 3 of RFA2.

report referenced in (b), approval to continue to operate wind turbine 368 without remediation actions is granted from the Department in consultation with DOGAMI. [Amendment #2]

Council previously imposed Condition 62, which requires the certificate holder to 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. Condition 62 would continue to apply to the proposed O&M demonstration activity.

Integration of Disaster Resilience Design

In RFA2, the certificate holder explains that although disaster resilience and climate change impacts were not addressed in the original ASC, the facility has been in operation for 7 years, and during that time, climate change has not impacted the facility. Disasters such as those relating to greater-intensity rainfall events, fluctuations in typical annual snowpack (above or below normal), and warmer average annual temperatures, are not anticipated to have a major impact on the geologic, geotechnical, and seismic conditions at the Facility. Furthermore, sea level rise will not affect the Facility due to its location.

Additionally, the certificate holder explains that GE Renewables, a contractor that performs O&M activities at the facility, maintains an Emergency Preparedness and Fire Prevention Plan that 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. This Plan, which is updated on an annual basis was included as Attachment 5 of RFA2.

Based upon compliance with both existing and proposed site certificate conditions, and because the proposed amendment would not result in the placement of facility components within geologic areas that have not been previously evaluated, the Department recommends that Council find that the proposed amendment would not affect the certificate holder's characterization of the site or seismic and non-seismic hazards, or its ability to design, engineer, and construct the facility to avoid dangers to human safety presented by seismic, geologic or soils hazards.

<u>Conclusions of Law</u>

Based on the foregoing analysis, subject to compliance with existing and recommended conditions, and in compliance with OAR 345-022-0020(2), the Department recommends that the Council find that the certificate holder would satisfy the requirements of the Council's Structural Standard.

III.A.3 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).
*****

Findings of Fact

The Land Use standard requires the Council to find that the proposed O&M demonstration activity would continue to comply with local applicable land use substantive criteria, as well as the statewide planning goals adopted by the Land Conservation and Development Commission (LCDC).[6]

In RFA2, the certificate holder evaluates the requirements of the applicable substantive land use criteria and the proposed RFA2 O&M demonstration activities. The certificate holder explains that RFA2 would not change the previously approved maximum number of turbines, maximum generating capacity, or infrastructure locations within the previously approved site

[6] The Council must apply the Land Use standard in conformance with the requirements of ORS 469.504.

boundary, and that the changes would be only occur within Gilliam County. The Department concurs with this statement, and as such, only evaluates the applicable substantive criteria of Gilliam County for RFA2.[7] The Department's assessment of the certificate holder's land use evaluation is presented below.

The proposed RFA2 demonstration activity at two specific wind turbines (T368 and T370), which would lower the minimum aboveground blade tip clearance and increase blade tip height (of actual wind turbines versus previously authorized height), could impact the certificate holder's ability to comply with setback zoning provisions, where the setback is based on wind turbine maximum blade tip height. GCZO Section 7.020(A) specifies that setback requirements are established for uses within specific zones. GCZO Section 7.020(T)(5)(d) establishes setbacks based on maximum blade tip height and therefore is evaluated below.

GCZO Section 7.020(T)(5)(d) Wind Power Generation Facility Siting Requirements

The following setback requirements and restrictions apply to the siting of a facility:

… Towers shall be set back at a minimum, 110% of maximum total turbine height from blade tip height, measured from the centerline of the turbine tower from:

(1) Any State, County or Federal right-of-way or the nearest edge of a State, County, or Federal roadway, whichever is closer;
(2) Any right of ingress or egress on the owner's property;
(3) Any overhead utility lines;
(4) All property lines; if adjacent landowner agrees in writing to a lesser distance, this requirement may be waived.
(5) Any existing guy wire, anchor, or small wind energy tower on the property.
(6) Any residence including those outside the project boundary. If a landowner agrees in writing to a lesser distance, this requirement may be waived.
(7) A minimum of 150% of the maximum total turbine height from blade tip height, measured from the centerline of the turbine tower, from federal transmission line. If affected parties agree in writing to a lesser distance, this requirement may be waived.

Council previously imposed Condition 40 to incorporate GCZO Section 7.020(T)(5)(d) setback requirements. In RFA2 Section 6.5 *Land Use*, the certificate holder asserts that the proposed O&M demonstration activity would not impact the ability of wind turbines 368 and 370 to comply with previously imposed setback restrictions. Based on review of RFA2 facility maps and the certificate holder's assertion, the Department agrees that the increase in blade tip height

[7] On August 25, 2006, during the review of the ASC, the Council appointed the Gilliam County Court and the Morrow County Court as Special Advisory Groups (SAGs) for the Shepherds Flat Wind Facility (SFWS).

would not impact the certificate holder's ability to comply with Condition 40 setback restrictions.

Conclusions of Law

Based on the foregoing findings and the evidence in the record, and subject to compliance with existing site certificate conditions, the Department recommends the Council find that the proposed O&M demonstration activity would continue to comply with the Land Use standard.

III.A.4 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****

Findings of Fact

The EFSC Fish and Wildlife Habitat standard requires the Council to find that the design, construction and operation of a proposed facility, or facility with proposed changes, is consistent with the Oregon Department of Fish and Wildlife's (ODFW) habitat mitigation policy, goals, and standards, as set forth in OAR 635-415-0025. The ODFW Habitat Mitigation Policy and EFSC Fish and Wildlife Habitat standard create requirements to mitigate impacts to fish and wildlife habitat, based on the quantity and quality of the habitat as well as the nature, extent, and duration of the potential impacts to the habitat. The policy also establishes a habitat classification system based on value the habitat would provide to a species or group of species. There are six habitat categories; Category 1 being the most valuable and Category 6 the least valuable.

Potential Habitat Impacts

The proposed O&M demonstration activity for wind turbines T368 and T370 would include onsite equipment delivery; equipment and material removal and disposal; onsite use of a crane; and assembly and placement of turbine blade and nacelle. During these activities, potential impacts would include temporary vegetation disturbance of approximately 0.98-acre within Category 3 Grassland and Rabbitbrush Steppe habitat during from use of a single crane track and semi-trucks in the areas within and near turbines T368 and T370. Council previously imposed Condition 38 and 84 requiring that the certificate holder implement and plan during facility operations to control the introduction and spread of noxious weeds and revegetate temporarily disturbed areas. Condition 84, Revegetation Plan, could be construed to only apply to areas temporarily disturbed during construction activities. To ensure that the requirements of the plan apply to temporary disturbed areas during the proposed O&M demonstration activities, the Department recommends Council amend the condition as follows:

Recommended Amended Condition 84: The certificate holder shall restore areas disturbed by facility construction but not occupied by permanent facility structures, and temporarily disturbed during routine operational road work activity, according to the methods and monitoring procedures described in the Revegetation Plan that is incorporated in the Final Order on Amendment 2~~#1~~ for the Shepherds Flat Wind Farm as Attachment D ~~SFC-B~~ and as amended from time to time. [Amendment #1 (SFWF); Amendment #2]

Based on compliance with the recommended amended condition, the Department recommends Council find that temporary habitat disturbance impacts from the proposed O&M demonstration activity would comply with Council's Fish and Wildlife Habitat standard.

Potential Impact to State-Sensitive Species

The certificate holder conducted a desktop review to identify State Sensitive species with the potential to occur within the analysis area based on species range and existing habitat. The desktop review evaluated ODFW's 2016 Sensitive Species List. Based on this desktop review, the certificate holder identified suitable habitat within the analysis area for: 18 State-sensitive species (including 3 reptiles, 10 birds, and 5 bat species). Of these State-sensitive species, presence was confirmed for the following: 3 birds and 1 bat; and presence was expected or identified as having a potential to occur for the following additional State-sensitive species: 4 birds and 4 bats.

Permanent changes from the proposed O&M demonstration activity, not previously evaluated, include a lower minimum aboveground blade tip clearance from 25 to 21.5 meters, increasing the overall rotor diameter and rotor swept area for two wind turbines, T368 and T370, from 100 to 127 meters. In RFA2, the certificate holder describes that potential impacts from these dimension changes could be an increase in bird and bat fatality from collision risk, however asserts that based on studies conducted in 2007 through 2016, the effect of turbine size on bird and bat collision risk remains unclear. Based on review of the studies referenced in RFA2, the Department agrees that a change in minimum aboveground blade tip clearance and rotor diameter does not represent a direct correlation in bird and bat fatality risk.

Nonetheless, in response to ODFW recommendations that a bird and bat fatality monitoring study be conducted for the two turbines included in the proposed O&M demonstration activity, the certificate holder proposes to revise the Wildlife Monitoring and Mitigation Plan (WMMP), necessitating an administrative revision to Condition 83, as provided below. The WMMP revisions would address potential indirect impacts of bird and bat collision fatality risk by providing a financial contribution or participating in a research project designed to improve scientific understanding of larger turbine components on birds and bats, or, remit a financial contribution to the Rowena Wildlife Clinic (or equivalent rehabilitation facility approved by ODOE and ODFW). Contribution to the Rowena Wildlife Clinic is an approved and previously

implemented mitigation measure in the existing WMMP. The Department recommends Council approve the WMMP, as amended, in Attachment E of this order.

> **Recommended Amended Condition 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~~ 2* as Attachment ~~A~~ E and as amended from time to time. [Amendment #1 (SFWF); Amendment #1; Amendment #2]

Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with existing site certificate conditions, the Department recommends the Council find that the proposed RFA2 O&M demonstration activity would comply with the Council's Fish and Wildlife Habitat standard.

III.A.5 Division 24 Standards

The Council's Division 24 standards include specific standards for the siting of wind project, which is further evaluated below.

III.A.5.1 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.*

Findings of Fact

OAR 345-024-0010 requires the Council to consider specific public health and safety standards related to wind energy facilities. Under this standard, the Council must evaluate a certificate holder's proposed measures to exclude members of the public from proximity to the turbine blades and electrical equipment, and the certificate holder's ability to design, construct and operate the facility, with proposed changes, to prevent structural failure of the tower or blades and to provide sufficient safety devices to warn of failure.

Potential Impacts from Structural Failure of the Tower or Blades and Safety Devices and Testing Procedures to Warn of Impending Failure

The Council must evaluate if the certificate holder has demonstrated that it has the ability to preclude a structural failure in the first place through design, construction and operation of the turbines. OAR 345-024-0010(2) does not require that a certificate holder demonstrate an *elimination* of all public health and safety risk *[Emphasis added].* Instead, it requires that the certificate holder design, construct and operate the facility to avoid structural failure, to have adequate mechanisms in place to warn of an impending failure, and to minimize the consequences of such failure.

The proposed O&M demonstration activity, resulting in a lower minimum aboveground blade tip clearance (25 to 21.5 meters) compared to the Council's previous evaluation could potentially result in increased public health and safety risks. The Department evaluates the sufficiency of previously imposed conditions related to safety devices and testing procedures to warn of impending failure and minimize potential increases in risk.

The site certificate includes a number of existing conditions that were imposed to address sub(2) of the standard and which would continue to ensure that the certificate holder reduces the risk of potential impacts from structural failure of the wind turbine tower or blades.

- Condition 71 requires that the certificate holder notify the Department and the Planning Directors of Gilliam County and Morrow County within 72 hours of any accidents or mechanical failures associated with operation of the facility that may result in public health and safety concerns.
- Condition 40 requires that the certificate holder to; maintain a 3,520 foot setback from the property line of properties zoned residential use or designated in the Gilliam County Comprehensive Plan as residential. Condition, and 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 (assuming a minimum road right of way width of 60 feet).

As mentioned above in Section III.A.1 *General Standard of Review*, Council imposed Condition 26 in The *Final Order on the ASC* to establish limits on the turbines selected, depending on the turbine type selected. Condition 26(d) established a the minimum blade tip clearance of 25 meters above the ground at the closest point of rotation. The proposed lowering of the minimum aboveground blade tip clearance could result in potential public health and safety impacts from increased proximity to turbine blades. However, the certificate holder describes that the Turbines 368 and 370 would remain located on private property, and that public access would be limited.

Based on the certificate holders' representation, the nearest two Noise Sensitive Receptors (NSR's) are located approximately 4.5 kilometers away from T368 and T370, and that T368 and 370 would remain in compliance with the remaining setback requirements of Condition 40, following the proposed demonstration activities. As such, the Department recommends that the Council consider that the facility design, including restricted public access, and compliance to the setback requirements of Condition 40, to be sufficient to minimize potential increases in

public health and safety risks from proximity to Turbines 368 and 370, with lower minimum aboveground blade tip clearance.

Based upon the proposed RFA2 O&M demonstration activities for wind turbines 368 and 370, the Department recommends that Council amend Condition 26 to specify the minimum blade tip clearance from 25 meters to 21.5 meters. The Department notes that the lowering of blade tip clearance would only apply to Turbines 368 and 370. The amended condition would read as follows:

> **Recommended Amended Condition 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 the Department 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<u>, with the exception of turbine number 368 and 370 for which the minimum blade tip clearance must be 21.5 meters above the ground</u>.
>
> (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 25 meters above ground.
>
> [Amendment #1 (SFWF); Amendment #1<u>, Amendment #2</u>]

As mentioned above, the proposed O&M demonstration activity occurring at T368 and 370 would not only lower the minimum blade tip clearance, but would also increase maximum height and the rotor diameter of the two specified turbines. The new maximum height of the demonstration turbines would be 150 meters, consistent with the maximum blade tip height limited in Condition 26. Council previously evaluated and approved turbines with a maximum blade tip height of 150 meters in the Final Order on the ASC, and found that the certificate older could design, construct, and operate the facility in compliance with the Public Health and Safety Standard for Wind Energy Facilities.

Condition 57 requires the certificate holder to submit a Notice of Proposed Construction or Alteration (Form 7460) to the Federal Aviation Administration (FAA) and the Oregon Department

of Aviation (ODA). Because the existing turbine specifications feature a maximum blade tip height of 135 meters, and the proposed demonstration activities would increase the maximum height to 150 meters, the Department recommends Council impose condition 106 to require the certificate holder to submit a Notice of Proposed Construction and Alteration to the FAA and ODA. The recommended Condition 106 would read as follows:

> **Recommended Condition 106**: Prior to the O&M demonstration activity for wind turbines 368 and 370, as approved in RFA2, the certificate holder shall submit a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA) and the Oregon Department of Aviation identifying the new maximum blade tip height of 150 meters. The certificate holder shall promptly notify the Department of the responses from the FAA and the Oregon Department of Aviation. [Amendment #2]

The Department recommends that Council find that compliance with the existing and recommended amended conditions would continue to satisfy the requirements of the standard and ensure that the proposed RFA2 facility modifications are designed, constructed, and operated to preclude structural failure of the tower or blades that could endanger public safety, and that the proposed RFA2 facility modifications would have adequate safety devices and testing procedures to warn of impending failure and minimize consequences of such failure, should it occur.

Conclusions of Law

Based on the foregoing analysis, and subject to compliance with existing and recommended conditions, the Department recommends the Council find that the proposed RFA2 O&M demonstration activity would comply with the Council's Public Health and Safety Standards for Wind Energy Facilities.

III.A.5.2 Cumulative Effects Standard 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.

Findings of Fact

This standard requires the use of practicable measures to reduce the cumulative adverse environmental effects by practicable measures.

Access Roads

OAR 345-024-0015(1) encourages the use of existing roads for facility site access, minimizing the amount of land used for new roads, and locating new roads in such a manner that reduces adverse environmental impacts. The certificate holder proposes to utilize existing access roads, to be temporarily widened to support the O&M demonstration activity. No new permanent roads would be constructed as part of RFA2.

Because the proposed RFA2 facility modifications would not result in new permanent access roads, the Department recommends the Council continue to find that the certificate holder demonstrates that it would use existing roads where practicable to provide access to the site and through the temporary expansion of existing roads, would reduce adverse environmental impacts and constructed in a manner that minimizes the amount of land used.

Transmission Lines and Substations

RFA2 does not propose new transmission lines or substations, or changes to the previously approved site boundary. Therefore, the Department recommends Council find that RFA2 would not result in a significant adverse impact under OAR 345-024-0015(2) and (3) that was not addressed in a previous Council orders.

Wildlife Protection

OAR 345-024-0015(4) encourages facility design that reduces the risk of injury to raptors or other vulnerable wildlife in areas near wind turbines or electrical equipment.

The proposed RFA2 O&M demonstration activity would increase the rotor-swept diameter from 100 meters to 127 meters, and decrease the aboveground blade tip clearance by 3.5 meters. The proposed changes in wind turbine dimension could result in increased bird and bat fatality risk from wind turbine collision. As discussed in Section III.A.4, *Fish and Wildlife Habitat* of this order, the certificate holder, proposes to revise the Wildlife Monitoring and Mitigation Plan (WMMP), in response to ODFW recommendations, to establish participation or funding to a research project that would benefit the affected species, or remission of payment to a wildlife rehabilitation fund to benefit the affected species (i.e. avian species with risk of wind turbine

collision within the analysis area). The revised Wildlife Monitoring and Mitigation Plan (WMMP) is provided as Attachment E to this order.

Visual Features

OAR 345-024-0015(5) encourages the certificate holder to design a facility to minimize adverse visual features. The visual features of the proposed demonstration wind turbines would be similar to those previously evaluated by Council. Additionally, based on compliance with existing site certificate conditions, he certificate holder would implement the following measures to reduce potential visual impacts from the proposed repowered wind turbines:

- Uniformly paint turbine towers, nacelles, and rotors in a neutral color to blend with the surrounding landscape
- Exterior nighttime lighting would be kept to a minimum

Based on the evidence in the record and subject to compliance with existing site certificate conditions, the Department recommends the Council find the certificate holder continues to demonstrate that it can reduce cumulative adverse environmental effects in the vicinity by designing the components of the facility, with proposed changes, to minimize the adverse impacts of lighting.

Lighting

OAR 345-024-0015(6) requires the use of techniques to prevent casting glare from the site and the use of minimum lighting necessary for safety and security purposes, except as otherwise required by the Federal Aviation Administration (FAA) and the Oregon Department of Aviation.

Condition 95 requires wind turbines to be equipped with the minimum turbine tower lighting required by FAA. Based on compliance with this condition, the Department recommends the Council find the certificate holder continues to demonstrate that it can reduce cumulative adverse environmental effects in the vicinity by designing the components of the facility, with proposed changes, to minimize the adverse impacts of lighting.

<u>Conclusions of Law</u>

Based on the foregoing findings of fact and conclusions, and subject to compliance with existing conditions, the Department recommends Council finds that the proposed RFA2 facility modifications would comply with the Council's Cumulative Effects Standards for Wind Energy Facilities.

<u>III.A.6 Other Applicable Regulatory Requirements Under Council Jurisdiction</u>

Under ORS 469.503(3) and under the Council's General Standard of Review (OAR 345-022-0000), the Council must determine whether the proposed facility complies with "all other

Oregon statutes and administrative rules…as applicable to the issuance of a site certificate for the proposed facility." This section addresses the applicable Oregon statutes and administrative rules that are not otherwise addressed in Council standards, including the Oregon Department of Environmental Quality's noise control regulations.

<u>III.A.6.1 Noise Control Regulations: OAR 340-035-0035</u>

(1) Standards and Regulations:
*****
(b) New Noise Sources:

(B) New Sources Located on Previously Unused Site:

(i) No person owning or controlling a new industrial or commercial noise source located on a previously unused industrial or commercial site shall cause or permit the operation of that noise source if the noise levels generated or indirectly caused by that noise source increase the ambient statistical noise levels, L10 or L50, by more than 10 dBA in any one hour, or exceed the levels specified in Table 8, as measured at an appropriate measurement point, as specified in subsection (3)(b) of this rule, except as specified in subparagraph (1)(b)(B)(iii).
(ii) The ambient statistical noise level of a new industrial or commercial noise source on a previously unused industrial or commercial site shall include all noises generated or indirectly caused by or attributable to that source including all of its related activities. Sources exempted from the requirements of section (1) of this rule, which are identified in subsections (5)(b) - (f), (j), and (k) of this rule, shall not be excluded from this ambient measurement.
(iii) For noise levels generated or caused by a wind energy facility:
(i) The increase in ambient statistical noise levels is based on an assumed background L50 ambient noise level of 26 dBA or the actual ambient background level. The person owning the wind energy facility may conduct measurements to determine the actual ambient L10 and L50 background level.
(ii) The "actual ambient background level" is the measured noise level at the appropriate measurement point as specified in subsection (3)(b) of this rule using generally accepted noise engineering measurement practices. Background noise measurements shall be obtained at the appropriate measurement point, synchronized with windspeed measurements of hub height conditions at the nearest wind turbine location. "Actual ambient background level" does not include noise generated or caused by the wind energy facility.
(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.

(v) For purposes of determining whether an operating wind energy facility complies with the ambient noise standard where a landowner has not waived the standard, noise levels at the appropriate measurement point are measured when the facility's nearest wind turbine is operating over the entire range of wind speeds between cut-in speed and the windspeed corresponding to the maximum sound power level and no turbine that could contribute to the noise level is disabled. The facility complies with the noise ambient background standard if the increase in noise over either the assumed ambient noise level of 26 dBA or to the actual ambient background L10 and L50 noise level, if measured, 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.

(vii) For purposes of determining whether an operating wind energy facility satisfies the Table 8 standards, noise generated by the energy facility is measured at the appropriate measurement point when the facility's nearest wind turbine is operating at the windspeed corresponding to the maximum sound power level and no turbine that could contribute to the noise level is disabled.

*****

Findings of Fact

The Department of Environmental Quality (DEQ) noise control regulations at OAR 340-035-0035 have been adopted by Council as the compliance requirements for EFSC-jurisdiction energy facilities. The analysis area for the Noise Control Regulation is the area within and extending 1-mile from the site boundary.

Noise generated by a wind energy facility located on a previously unused site must comply with two tests: the "ambient noise degradation test" and the "maximum allowable noise test." Under the ambient noise degradation test, facility-generated noise must not increase the ambient hourly L10 or L50 noise levels at any noise sensitive property by more than 10 dBA when turbines are operating "between cut-in speed and the wind speed corresponding to the maximum sound power level." To show that a facility complies with this test, the certificate holder may use an assumed ambient hourly L50 noise level of 26 dBA or measure the actual ambient hourly noise levels at the receiver in accordance with the procedures specified in the regulation. In this case, the certificate holder elected to use an assumed ambient hourly L50 noise level of 26 dBA.

To demonstrate compliance with the ambient noise degradation test, the noise generated during facility operation must not cause the hourly L_{50} noise level at any noise-sensitive property to exceed 36 dBA. However, OAR 340-035-0035(1)(b)(B)(iii)(III) relieves the certificate holder from having to show compliance with the ambient noise degradation test "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" (a "noise waiver").

Under the maximum allowable noise test at OAR 340-035-0035(1)(b)(B)(i) a wind energy facility may not exceed the noise levels specified in Table 8 of the noise rules, as represented in Table 1, *Statistical Noise Limits for Industrial and Commercial Noise Sources* below. Pursuant to OAR 340-035-0035(1)(b)(B)(iii)(III), it is not possible for a property owner to waive an exceedance under the maximum allowable noise test.

Table 1: Statistical Noise Limits for Industrial and Commercial Noise Sources

Statistical Descriptor[1]	Maximum Permissible Hourly Statistical Noise Levels (dBA)	
	Daytime (7:00 AM - 10:00 PM)	Nighttime (10:00 PM - 7:00 AM)
L50	55	50
L10	60	55
L1	75	60

Notes:
1. The hourly L50, L10 and L1 noise levels are defined as the noise levels equaled or exceeded 50 percent, 10 percent, and 1 percent of the hour, respectively.

Source: OAR 340-035-0035, Table 8

Potential Noise Impacts

In RFA2, the certificate holder states that the sound power properties of the two modified turbines is expected to be similar to the existing wind turbines, with a sound power level of 105 dBA per turbine. The nearest two noise sensitive receptors to wind turbines 368 and 370 is 4.5 kilometers (approximately 2.8 miles) from the turbines. The certificate holder indicates that the original noise study[8] demonstrated compliance with the DEQ noise requirements. Council previously imposed Condition 97, which requires the certificate holder to provide sound power level and octave band data, based on manufacturer warranties or as otherwise confirmed acceptable by the Department, and demonstrate through a final noise modeling assessment compliance with the DEQ noise requirements. Because the wind turbines would be modified as part of proposed RFA2 O&M demonstration activity, the Department recommends Council impose a similar requirement that the certificate holder submit to the Department manufacturer verified noise specifications to verify ongoing compliance with the applicable requirements. The recommended condition is as follows:

> **Recommended Condition 107**: Prior to completion of the O&M demonstration activity for wind turbines 368 and 370, as approved in RFA2, the certificate holder shall submit to the Department the maximum sound power level and octave band for the modified wind turbines based on manufacturer' warranties or confirmed by other means acceptable to the Department. [Amendment #2]

<u>Conclusions of Law</u>

Based on the foregoing findings, the Department recommends that the Council find that the proposed RFA2 O&M demonstration activity would comply with the Noise Control Regulations in OAR 340-035-0035(1)(b)(B).

III.B. Standards Not Likely to Be Impacted by Request for Amendment 2

RFA2, as described throughout this order, solely requests authorization for a proposed O&M demonstration activity limited to two existing wind turbines (T368 and T370), where blade replacement and nacelle modification would occur. Changes in wind turbine dimensions would lower wind turbine minimum aboveground blade tip clearance from 25 to 21.5 meters, increase blade tip height from 135 to 150 meters, and increase rotor diameter from 100 to 127 meters, with the change in minimum aboveground blade tip clearance representing the only change necessitating a site certificate condition amendment as maximum blade tip height of 150 meters was previously evaluated and approved (Condition 26) and rotor diameter was not previously correlated with an impact protected by a Council standard nor limited by the site certificate.

[8] SFWF Exhibit X

In RFA2, the certificate holder describes the number of equipment and personnel that would be required for the proposed O&M demonstration activity and represents that it represents typical O&M activity. Based on the Department's understanding of typical O&M activities at the site, the Department agrees and recommends Council consider that, based on previously evaluated impacts and imposed conditions, the following standards would not be impacted by RFA2 and do not require re-evaluation in this order.

Table 2: Summary of Council Standards Not Likely Impacted by Amendment 2

Rule Citation	Standard	Department's Evaluation
345-022-0010	Organizational Expertise	Amendment would not result in change to organizational structure or require new expertise or experience. Amendment would not impact certificate holder's ability to satisfy requirements
345-022-0022	Soil Protection	Potential impacts to soils would be the same (erosion, risk of lubricant oil spill). Amendment would not impact certificate holder's ability to satisfy requirements. Conditions 51 (hazardous material handling), 55 (72-hr spill notification) and 77 (operational erosion control, maintenance and inspection) apply. Additional conditions not necessary to satisfy standard.
345-022-0040	Protected Areas	Potential impact from change in minimum aboveground blade tip clearance would not result in new traffic, noise, visual, water or wastewater impacts to any protected area. Additional conditions not necessary to satisfy standard.
345-022-0050	Retirement and Financial Assurance	Amendment would not result in change to the facilities Retirement and Financial Assurance. Conditions 7 (Prevent development on site that would preclude restoration), 8 (maintaining a Bond or Letter of Credit), and 30 (Adjusting the bond or letter of credit) apply. Additional conditions not necessary to satisfy standard.
345-022-0070	Threatened and Endangered Species	Potential Impact from change in minimum aboveground blade tip clearance would not result in new impacts to Threatened and Endangered Species. Conditions 83 (Wildlife Monitoring and Mitigation Plan), and 92 (Speed Limits on facility roads) apply. Additional conditions not necessary to satisfy standard.
345-022-0080	Scenic Resources	Potential impact from change in minimum aboveground blade tip clearance would not result in new visual impacts or ground disturbing impacts in areas not previously evaluated or would occur in areas where existing requirements (revegetation and weed control) would continue to apply. Conditions 93 (Visual impact minimization), 95 (Exterior nighttime lighting), 43 (Final Design map), 45 (inadvertent discovery), and 46 (Oregon Trail Buffers) apply. Additional conditions not necessary to satisfy standard.
345-022-0090	Historic, Cultural, and Archaeological Resources	
345-022-0100	Recreation	Potential impact from change in minimum aboveground blade tip clearance would not result in new indirect/direct, traffic, noise, or visual impacts to any important recreational opportunity. Additional conditions not necessary to satisfy standard.

Table 2: Summary of Council Standards Not Likely Impacted by Amendment 2

Rule Citation	Standard	Department's Evaluation
345-022-0110	Public Services	Potential impact from change in minimum aboveground blade tip clearance would not result in new impacts to providers of public/private services (housing, hospital, traffic, fire, police, water or wastewater). Conditions 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), and 100 (Operation sanitary wastewater compliance) apply. Additional conditions not necessary to satisfy standard.
345-022-0120	Waste Minimization	Amendment would not result in new or changes to existing sources of waste during operation. Conditions 50 (Handling of hazardous materials), 51 (Hazardous material spill cleanup), 100 (Discharge of sanitary wastewater), 102 (Operation waste management plan requirements) apply**.** Amendment would not impact certificate holder's ability to satisfy requirements.
	Divisions 23 Standards	Apply to nongenerating facilities and therefore do not apply to this facility or proposed RFA2 modifications
345-024-0090	Siting Standards for Transmission Lines	Amendment would not result in changes to facility transmission lines; standard would not be impacted by amendment request. Conditions 58 (Maintenance of turbine pads), 86 (Disturbance avoidance areas), 93 (Visual impact minimization), and 95 (Exterior nighttime lighting) apply.
	Removal-Fill Law	Amendment would not result in impacts to new area or result in stream crossings, nor request a removal fill permit. Regulatory requirements would not be impacted by amendment request.
	Water Rights	Amendment would not result in new or changes in water use. Regulatory requirements would not be impacted by amendment request. Condition 78 (operational water usage) applies.

For the above-described reasons, the Department recommends Council find that the standards listed in Table 3, *Summary of Council Standards Not Likely Impacted by Amendment 2* are not likely to be impacted by RFA2.

Sections III.B.1 through III.B.14 present the language of the identified standards not likely to be impacted by RFA2 from OAR 345 Chapter 22, for reference purposes only.

III.B.1 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 applicant 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.

III.B.2 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.

III.B.3 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.

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<u>III.B.4 Retirement and Financial Assurance: OAR 345-022-0050</u>

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.

III.B.5 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.

III.B.6 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.

III.B.7 Historic, 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 ORS 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.

*****

<u>III.B.8 Recreation: OAR 345-022-0100</u>

(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.
*****

<u>III.B.9 Public Services: OAR 345-022-0110</u>

(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.

*****

<u>III.B.10 Waste Minimization: OAR 345-022-0120</u>

(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.

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III.B.11 Division 23 Standards

The Division 23 standards apply only to "nongenerating facilities" as defined in ORS 469.503(2)(e)(K), except nongenerating facilities that are related or supporting facilities. The facility, with proposed changes, would not be a nongenerating facility as defined in statute and therefore Division 23 is inapplicable to the facility, with proposed changes..

III.B.12 Siting Standards for Transmission Lines: OAR 345-024-0090

To issue a site certificate for a facility that includes any transmission line under Council jurisdiction, the Council must find that the applicant:

(1) Can design, construct and operate the proposed transmission line 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;

(2) Can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.

III.B.13 Removal-Fill

The Oregon Removal-Fill Law (ORS 196.795 through 196.990) and Department of State Lands (DSL) regulations (OAR 141-085-0500 through 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."[9]

[9] ORS 196.800(15) defines "Waters of this state." The term includes wetlands and certain other waterbodies.

The Council, in consultation with DSL, must determine whether a removal-fill permit is needed and if so, whether a removal-fill permit should be issued.

III.B.14 Water Rights

Under ORS Chapters 537 and 540 and OAR Chapter 690, the Oregon Water Resources Department (OWRD) administers water rights for appropriation and use of the water resources of the state. Under OAR 345-022-0000(1)(b), the Council must determine whether the facility would comply with these statutes and administrative rules. OAR 345-021-0010(1)(o)(F) requires that if a facility needs a groundwater permit, surface water permit, or water right transfer, that a decision on authorizing such a permit rests with the Council.

IV. PROPOSED CONCLUSIONS AND ORDER

Based on the recommended findings and conclusions included in this order, the Department recommends that Council make the following findings:

1. The O&M demonstration activity included in Request for Amendment 2 of the Shepherds Flat Central site certificate complies with the requirements of the Oregon Energy Facility Siting Statutes, ORS 469.300 to 469.520.

2. The O&M demonstration activity included in Request for Amendment 2 of the Shepherds Flat Central site certificate complies with the standards adopted by the Council pursuant to ORS 469.501.

3. The O&M demonstration activity included in Request for Amendment 2 of the Shepherds Flat Central site certificate complies with all other Oregon statutes and administrative rules identified in the project order as applicable to the issuance of a site certificate for the facility.

Accordingly, the Department recommends that the Council find that the O&M demonstration activity included in Request for Amendment 2 of the Shepherds Flat Central site certificate complies with the General Standard of Review (OAR 345-022-0000). The Department recommends that the Council find, based on a preponderance of the evidence on the record, that the site certificate may be amended as requested.

Draft Proposed Order

The Department recommends that the Council approve Amendment 2 of the Shepherds Flat Central site certificate.

Issued this 24th day of September 2019

The OREGON DEPARTMENT OF ENERGY

By: _____

Todd Cornett, Assistant Director
Oregon Department of Energy, Energy Facility Siting Division

ATTACHMENTS

Attachment A: Draft Amended Site Certificate
Attachment B: Reviewing Agency Comments on preliminary RFA2
Attachment C: [Reserved for Draft Proposed Order Comments]
Attachment D: Draft Amended Revegetation Plan
Attachment E: Draft Amended Wildlife Monitoring and Mitigation Plan

Attachment A: Draft Amended Site Certificate

ENERGY FACILITY SITING COUNCIL

OF THE

STATE OF OREGON

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

~~March~~ Month Day~~12~~, ~~2010~~2019

The Oregon Energy Facility Siting Council

FIRST AMENDED SITE CERTIFICATE FOR SHEPHERDS FLAT CENTRAL

I. INTRODUCTION

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

The findings of fact, reasoning and conclusions of law underlying the terms and conditions of this site certificate are set forth in the following documents, incorporated herein by this reference: (a) the Council's *Final Order on the Application for the Shepherds Flat Wind Farm* issued on July 25, 2008, (b) the *Final Order on Amendment #1 for the Shepherds Flat Wind Farm*, ~~and~~ (c) the *Final Order on Amendment #1*, (d) and the *Final Order on Amendment #2*. In interpreting this site certificate, any ambiguity will be clarified by reference to the following, in order of priority: (1) this ~~First~~ Second Amended Site Certificate, (2) the *Final Order on Amendment #~~1~~2*, (3) the *Final Order on Amendment #1*, (4) the *Final Order on Amendment #1 for the Shepherds Flat Wind Farm*, (~~4~~5) the *Final Order on the Application for the Shepherds Flat Wind Farm* and (~~5~~6) the record of the proceedings that led to the Final Orders on the Application, ~~and~~ Amendment #1, and Amendment #2 for the Shepherds Flat Wind Farm and to the *Final Order on Amendment #1* and *#2*. [Amendment #1 (SFWF); Amendment #1]

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

In interpreting this site certificate, any ambiguity will be clarified by reference to the following, in order of priority: this Second Amended Site Certificate, Final Order on Amendment #2, the Final Order on Amendment #1, the Final Order on the Application and the record of the proceedings that led to the Final Orders on the Application and Amendments #1, and #2. [Amendments #1, and #2]

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

II. SITE CERTIFICATION

1. To the extent authorized by state law and subject to the conditions set forth herein, the State authorizes the certificate holder to construct, operate and retire a wind energy facility, together with certain related or supporting facilities, at the site in Gilliam County and Morrow County, Oregon, as described in Section III of this site certificate. ORS 469.401(1).
2. This site certificate is effective until it is terminated under OAR 345-027-0110 or the rules in effect on the date that termination is sought or until the site certificate is revoked under ORS 469.440 and OAR 345-029-0100 or the statutes and rules in effect on the date that revocation is ordered. ORS 469.401(1).
3. This site certificate does not address, and is not binding with respect to, matters that were not addressed in the Council's Final Orders on the Application and Amendment #1 for the

Shepherds Flat Wind Farm and in the *Final Order on Amendment #1*. Such matters include, but are not limited to: building code compliance, wage, hour and other labor regulations, local government fees and charges and other design or operational issues that do not relate to siting the facility (ORS 469.401(4)) and permits issued under statutes and rules for which the decision on compliance has been delegated by the federal government to a state agency other 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] Request for Amendment #2 approves O&M demonstration activities for two specific wind turbines (T368 and T370). The demonstration activities include replacing the wind

turbine blades and modifying the nacelles. Request for Amendment #2 authorizes a lower minimum aboveground wind turbine blade tip clearance, from 25 to 21.5, to occur at Turbines numbered 368 and 370. [Amendment #2]

(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 certificate holder's construction contract documents, 2) acceptance testing has been satisfactorily completed and 3) the energy facility is ready to begin continuous operation consistent with the site certificate. The certificate holder shall promptly notify the Department of the date of completion of construction. The Council may grant an extension of the deadline for completing 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)]

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 the Department 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 370 for which the minimum blade tip clearance must be 21.5 meters above the 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 25 meters above ground.

[Amendment #1 (SFWF); Amendment #1, Amendment #2]

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

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

29 Before beginning construction and after considering all micrositing factors, the certificate holder shall provide to the Department, to the Oregon Department of Fish and Wildlife (ODFW) and to the Planning Directors of Morrow County and Gilliam County detailed maps of the facility site, showing the final locations where the certificate holder proposes to build facility components, and a table showing the acres of temporary and permanent habitat impact by habitat category and subtype, similar to Table 9 in the Final Order on Amendment #1 for the Shepherds Flat Wind Farm. The detailed maps of the facility site shall indicate the habitat categories of all areas that would be affected during construction (similar to the maps labeled "ODFW-2" in the site certificate application for the Shepherds Flat Wind Farm). In classifying the affected habitat into habitat categories, the certificate holder shall consult with the ODFW. The certificate holder shall not begin ground disturbance in an affected area until the habitat assessment has been approved by the Department. The Department may employ a qualified contractor to confirm the habitat assessment by on-site inspection. [Amendment #1 (SFWF)]

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

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

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

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

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

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

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

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

(d) The certificate holder shall use an issuer of the bond or letter of credit approved by 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 Historic Places (NRHP) as described in the Final Order on the Application for the Shepherds Flat Wind Farm.

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

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

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

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

[Amendment #1 (SFWF)]

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

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

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

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

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

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

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

4. Geotechnical Conditions

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

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

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

5. Hazardous Materials, Fire Protection & Public Safety Conditions

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

51 If a spill or release of hazardous material occurs during construction or operation of the facility, the certificate holder shall notify the Department within 72 hours and shall clean up the spill or release and dispose of any contaminated soil or other materials according to applicable regulations. The certificate holder shall make sure that spill kits containing items such as absorbent pads are located on equipment and at the field workshop. The certificate

holder shall instruct employees about proper handling, storage and cleanup of hazardous materials. [Amendment #1 (SFWF)]

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

53 During operation, the certificate holder shall ensure that all on-site employees receive annual fire prevention and response training, including tower rescue training, by qualified instructors or members of the local fire districts. The certificate holder shall ensure that all employees are instructed to keep vehicles on roads and off dry grassland, except when off-road operation is required for emergency purposes. The certificate holder shall encourage employees to become volunteer members of local fire departments and shall facilitate appropriate training.

54 During construction and operation of the facility, the certificate holder shall ensure that the field workshop and all service vehicles are equipped with shovels and portable fire extinguishers of a 4A5OBC or equivalent rating. [Amendment #1 (SFWF)]

55 During construction and operation of the facility, the certificate holder shall develop and implement fire safety plans in consultation with the local fire protection agencies (the North Gilliam County Rural Fire Protection District and the Ione Rural Fire Protection District) to minimize the risk of fire and to respond appropriately to any fires that occur on the facility site. In developing the fire safety plans, the certificate holder shall take into account the dry nature of the region and shall address risks on a seasonal basis. The certificate holder shall meet annually with local fire protection agency personnel to discuss emergency planning and shall invite local fire protection agency personnel to observe any emergency drill or tower rescue training conducted at the facility.

56 Upon the beginning of operation of the facility, the certificate holder shall provide a site plan to the local fire protection agencies (the North Gilliam County Rural Fire Protection District and the Ione Rural Fire Protection District). The certificate holder shall indicate on the site plan the identification number assigned to each turbine and the location of all facility structures and shall provide an updated site plan if additional turbines or other structures are later added to the facility. During operation, the certificate holder shall ensure that appropriate fire protection agency personnel have an up-to-date list of the names and telephone numbers of facility personnel available to respond on a 24-hour basis in case of an emergency on the facility site.

57 Before beginning construction, the certificate holder shall submit a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA) and the Oregon Department of Aviation identifying the proposed final locations of turbine towers and meteorological towers. The certificate holder shall promptly notify the Department of the responses from the FAA and the Oregon Department of Aviation. [Amendment #1 (SFWF)]

58 The certificate holder shall construct turbines on concrete foundations and shall surround the base of each tower with a ten-foot pad area of washed crushed rock on all sides. The certificate holder shall cover turbine pad areas with non-erosive, non-flammable material as

soon as possible following exposure during construction and shall maintain the pad area covering during operation of the facility.

59 The certificate holder shall follow manufacturers' recommended handling instructions and procedures to prevent damage to turbine or turbine tower components that could lead to failure.

60 The certificate holder shall install and maintain self-monitoring devices on each turbine, 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.

69 During operation, the certificate holder shall develop and implement a site health and safety plan that informs employees 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.

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

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

6. Water, Soils, Streams & Wetlands Conditions

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

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

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

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

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

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.

78 During facility operation, the certificate holder shall obtain water for on-site uses from a well at the field workshop, subject to compliance with applicable permit requirements. The certificate holder shall not use more than 5,000 gallons of water per day from the facility's 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 segmentsmust 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~~#2 as Attachment E~~A~~ and as amended from time to time. [Amendment #1 (SFWF); Amendment #1; Amendment #2]

84 The certificate holder shall restore areas disturbed by facility construction but not occupied by permanent facility structures, and temporarily disturbed during routine operational road work activity, according to the methods and monitoring procedures described in the Revegetation Plan that is incorporated in the Final Order on Amendment ~~#1~~#2 for the Shepherds Flat Wind Farm as Attachment ~~SFC-B~~D and as amended from time to time. [Amendment #1 (SFWF); Amendment #2]

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:

Species	Sensitive Period	Early Release Date
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]

12. New Conditions applicable to RFA2 facility modifications

The conditions listed in this section are specific to the facility modifications approved in the Second Amended Site Certificate.

104 After January 1 but no later than April 30 of the year after completion of the Operations and Maintenance demonstration activity for wind turbines 368 and 370, as approved in RFA2, the certificate holder shall include in its Annual Report an activity and operational status summary of the repowered wind turbines.

[Amendment #2]

105 Operation of the repowered Turbine 368 is subject to the following restrictions:

(a) Within five months of repowering Turbine 368, the certificate holder must conduct additional investigations of the foundation of Turbine 368, as recommended by the September 16, 2019 Foundation Inspection Report. The investigation report must be submitted to the Department for review, in consultation with DOGAMI.

(b) No later than five months after repowering Turbine 368, the certificate holder must implement the remediation actions recommended by the investigation report referenced in (a). Evidence of successful implementation of remediation actions must

be provided to the Department for verification before Turbine 368 can be operated beyond five months after repowering.

(c) Turbine 368 shall not be operated more than five months after repowering unless the remediation actions are implemented per the investigation report referenced in (a), unless, based on the findings of the investigation report referenced in (a), approval to continue to operate Turbine 368 without remediation actions is granted from the Department in consultation with DOGAMI.

[Amendment #1 (SFWF); Amendment #1, Amendment #2]

106 Before beginning the operation and maintenance demonstration activities at Turbines 368 and 370, the certificate holder shall submit a Notice of Proposed Construction or Alteration to the Federal Aviation Administration (FAA) and the Oregon Department of Aviation identifying the new maximum blade tip height of 150 meters. The certificate holder shall promptly notify the Department of the responses from the FAA and the Oregon Department of Aviation. [Amendment #2]

107 Prior to completion of the O&M demonstration activity for wind turbines 368 and 370, as approved in RFA2, the certificate holder shall submit to the Department the maximum sound power level and octave band for the modified wind turbines based on manufacturer' warranties or confirmed by other means acceptable to the Department. [Amendment #2]

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]

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

ENERGY FACILITY SITING COUNCIL	SOUTH HURLBURT WIND, LLC
By: _____	By: _____
Robert Shiprack, Chair Oregon Energy Facility Siting Council	Derrel A. Grant, Vice-President South Hurlburt Wind, LLC
Date: March 12, 2010	Date: March 12, 2010

Attachment B: Reviewing Agency Comments on preliminary RFA2

Shepherds Flat Central Request for Amendment 2 – Reviewing Agency Comment Index			
Date Comment Received	**Commenter Identification**		
	Last Name	**First Name**	**Organization**
Reviewing Agency Comments			
09/17/2019	Cherry	Steve	Oregon Department of Fish and Wildlife

MEMORANDUM

TO: Chase McVeigh - Walker
Oregon Department of Energy

FROM: Steve Cherry, District Wildlife Biologist
Oregon Department of Fish and Wildlife
PO Box 363 Heppner, OR 97836
(541) 676-5230
Steve.p.cherry@state.or.us

DATE: September 17, 2019

RE: Oregon Department of Fish and Wildlife (ODFW) Comments on the Request for Amendment 2 for Shepherds Flat Central wind facility

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GENERAL COMMENTS: ODFW appreciates the opportunity to review this project according to the Energy Facility Siting Standard for Fish and Wildlife Habitat, as well as the Threatened and Endangered Species Standard.

ODFW recognizes that the proposed amendment to reduce the blade-to-ground distance has the potential for different mortality effects on birds and bats. However, ODFW is not able to find published information that describes the mortality effects of these larger turbines on avian and bat species. There is data regarding changing turbine sizes and mortality effects but nothing with turbine sizes this large. Given the lack of available information demonstrating the risk to wildlife beyond what has already been assumed in the existing facility design and mitigation plan, ODFW would make the following comment.

SPECIFIC COMMENTS: ODFW would recommend that the Applicant complete two years of fatality monitoring on the two turbines after they have been retrofitted with the larger blades to look at mortality effects from the larger turbine sizes. We would recommend that they Applicant also complete the same monitoring on two adjacent turbines to use as a control for the monitoring of the two retrofitted turbines.

The temporary impacts from the construction of the new turbine blades will affect a relatively small area of grassland and shrub steppe – rabittbrush habitat. Since these areas will be revegetated according to the existing revegetation plan ODFW does not require any additional mitigation for the impacted acres.

ODFW has no further comments on this amendment at this time. Please contact Steve Cherry (District Wildlife Biologist) or Sarah Reif (Energy Coordinator) with any questions.

Attachment C: [Reserved for Draft Proposed Order Comments]

Attachment D: Draft Amended Revegetation Plan

Shepherds Flat Central : Amended
Revegetation Plan

[~~SEPTEMBER 11, 2009~~TBD]

I. Introduction

This plan describes methods and standards for restoration of areas of construction disturbance and areas temporarily disturbed during routing operational road work activities. This plan applies to the areas surrounding the permanent facility components of Shepherds Flat Central (SFC).[1] The objective of revegetation is to restore the disturbed areas to pre-disturbance condition or better. The site certificate for the facility requires restoration of these areas. This plan has been developed in consultation with the Oregon Department of Fish and Wildlife (ODFW).

The areas of construction disturbance include cultivated or otherwise developed agricultural land (cropland) as well as areas of grassland, shrub-steppe habitat and other habitat subtypes (wildlife habitat areas). The intensity of construction impact will vary. In some areas, the impact will be relatively light, but in other areas, heavy construction activity will remove all vegetation, remove topsoil and compact the remaining subsoil. Where vegetation has been damaged or removed during construction, the certificate holder must restore suitable vegetation. In addition, the certificate holder shall maintain erosion and sediment control measures put in place during construction until the affected areas are restored as described in this plan and the risk of erosion has been eliminated. The plan specifies monitoring procedures to evaluate revegetation success of disturbed wildlife habitat areas. Remedial action may be necessary for wildlife habitat areas that do not show revegetation progress. Additional mitigation may be necessary if revegetation is unsuccessful.

II. Description of the Project Area

Most of the SFC site lies within Gilliam County (approximately 6,886 acres). Approximately 49 acres within the site boundary lie within Morrow County. Much of the area in the northern part of the site is characterized by shallow soils. The area is used primarily for grazing of sheep, but low rainfall (approximately 9 inches of precipitation annually) limits forage, and sheep are typically removed from the area from May to November. The site contains areas of bare sand, exposed rock and bare soil, and there are numerous unimproved roads and off-road vehicle tracks as well as several electrical transmission line corridors. Some locations are highly disturbed from congregation of sheep around watering and transport sites. Invasive species (such as cheatgrass and spring-Whitlow grass) are the predominant grass species in most areas, but native species (such as Sandberg's bluegrass, needle-and-thread grass, bluebunch wheatgrass and six-weeks fescue) are also present. Portions of Eightmile Canyon lie within or near the site boundary. Eightmile Canyon contains an intermittent stream and is cultivated in some areas. The southern part of the site contains deeper soils. Most of the southern area is cultivated for dryland wheat farming.

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

III. Revegetation Methods

The certificate holder shall begin restoration of disturbed areas as soon as possible after completion of facility construction activity in the area to be restored. Restoration measures include soil preparation and seeding as described below. Planting should be done at the appropriate time of year to facilitate seed germination, based on weather conditions. The certificate holder shall choose planting methods based on site-specific factors such as slope, erosion potential and the size of the area in need of revegetation.

1. Correction for Compaction

In the northern section, soils are generally too shallow to become compacted by construction activities. Deeper soils in the southern section may become compacted. The certificate holder shall examine disturbed areas as soon as construction is finished in the area. Areas that appear to be affected by compaction will be treated by deep tillage or ripping (scarification) using the method preferred by the landowner. In some areas, compaction might not become evident until vegetation indicates the condition through poor seed sprouting, stunting or plant death. Where that occurs, the area will be tilled or ripped and then re-seeded.

2. Revegetation of Cropland

In the dryland wheat areas, the larger disturbed areas will be cultivated as soon as possible after construction work is done. If it is the proper season for wheat planting and the disturbed area is within a field that is not intended to remain fallow, the area will be planted with a wheat variety selected by the landowner. Otherwise, cultivation and planting will occur on the same schedule as in surrounding fields. The certificate holder will reimburse landowners for the work if landowners prefer to perform the plowing and planting themselves.

3. Revegetation of Wildlife Habitat Areas

The predominant wildlife habitat subtype that will be disturbed by facility construction is grassland. The seed mix used for revegetation in these areas will contain a mixture of species expected to perform well in the affected soils and including, as available, seed adapted to the local environment. The certificate holder will select a seed mix through consultation with the parcel landowner and the grazing right lessee, ODFW, the Oregon State University Extension Service, the Oregon Department of Agriculture, The Nature Conservancy and the Oregon Department of Energy (Department). The certificate holder shall use seed provided by a reputable supplier and complying with the Oregon Seed Law.

After construction activities are completed, disturbed areas will be evaluated to determine whether restoration seeding is needed. In some areas where existing vegetation has been crushed but not removed during construction, recovery is likely to occur in a reasonable time without intervention. Seeding will not be done in areas where the pre-construction condition was exposed rock, bare soil or sand that is unlikely to support vegetation.

Narrow areas of soil disturbance due to off-road trenching, off-road crane paths and other limited disturbance may be seeded and left without mulch. Hand seeding, rather than mechanical seeding, will be used in small areas where the use of planting equipment is likely to increase the area of disturbance. Larger disturbed areas will be seeded followed by application of weed-free

straw or other mulch to protect against erosion and preserve moisture. No-till methods, such as drilling or broadcast seeding, will be employed.

In the arid climate of the site, successful seeding is limited to mid-fall through very early spring. If seeding of large disturbance areas cannot be accomplished within this optimal seeding period within two months after construction disturbance, the areas will be mulched or otherwise treated to minimize erosion until seeding can be done in the fall.

4. Weed control

In the spring and early summer (approximately April through June), weeds commonly found on the site can be identified before they seed. After construction, all disturbed areas (except areas of exposed rock, bare soil and sand) will be evaluated annually in the spring for the presence of invasive weed species. The certificate holder shall implement weed control measures recommended by Gilliam County and Morrow County weed control authorities. Annual weed inspection and treatment of revegetation areas will be discontinued in areas that are determined to be successfully revegetated, but the certificate holder shall continue to implement a weed control program during facility operation, as required by Condition 38 of the site certificate.

IV. Monitoring

1. Revegetation Record

The certificate holder shall maintain a record of revegetation work for both cropland and wildlife habitat areas. In the record, the certificate holder shall include the date that construction activity was completed in the area to be restored, a description of the affected area (location, acres affected and pre-disturbance condition), the date that revegetation work began and a description of the work done within the affected area. The certificate shall update the revegetation records from time to time, as revegetation work occurs. The certificate holder shall provide copies of these records to the Department at the time of submitting the annual report required under the site certificate.

2. Monitoring Procedures

Cropland

During the first growing season following planting of cropland previously disturbed by facility construction, the certificate holder shall consult with the landowners on soil compaction, construction-related erosion or poor crop growth in disturbed areas. The certificate holder may rely on the judgment of the landowner regarding any corrective measures needed.

Wildlife Habitat Areas

The certificate holder shall monitor the revegetation of wildlife habitat areas as described in this section, unless the landowner has converted the area to a use inconsistent with the success criteria. The certificate holder shall employ a qualified investigator (an independent botanist or revegetation specialist) to examine all non-cropland revegetation areas to assess vegetation cover (species, structural stage, etc.) and progress toward meeting the success criteria described below in subsection (3). Within representative sample plots, the investigator will estimate the percentages of the area that are covered by bare soil, desirable native vegetation or invasive weed species. The investigator will qualitatively assess the degree of erosion at each site. The

investigator will compare the sample plots with representative reference plots of the same habitat category and subtype.

The investigator will survey at least 20 percent of the disturbed area. The investigator will select sample plots that are representative of all habitat subtypes disturbed. Sample plots must proportionally represent areas of light disturbance (crushed vegetation) and areas of heavier disturbance (scraped or heavily compacted soil). Reference plots will be selected from nearby undisturbed areas within the same habitat subtype and category. Reference plots should have similar slopes, soil depth and prevalence of rock outcrops as the sample plots to which they will be compared.

The investigator shall use the same reference and sample plots for every survey, unless the investigator finds that a plot is no longer suitable for survey purposes. If the investigator finds a plot is no longer suitable, the investigator will select a suitable replacement plot and report the reasons for the replacement to the certificate holder, the Department and ODFW.

Revegetation monitoring surveys will be conducted annually beginning one year after initial restoration seeding and continuing until there is sufficient evidence of progress for the Department to conclude that additional revegetation efforts in the area are not necessary. Thereafter, the restored areas will be surveyed at five-year intervals for the life of the facility.[2]

The investigator will report to the certificate holder, the Department and ODFW following each inspection. In the report, the investigator shall include an assessment of whether the revegetated areas are trending toward meeting the success criteria. The investigator will include in the report any remedial actions recommended. The investigator shall include a report on the success of weed control measures.

Within each revegetation area, the investigator shall evaluate the progress of habitat recovery in comparison to the reference area. The investigator shall evaluate the following site conditions (both within the revegetation area and within the reference area):

- Degree of erosion due to disturbance activities (high, moderate or low).
- Vegetation density.
- Relative proportion of desirable vegetation as determined by the average number of stems of desirable vegetation per square foot or by a visual scan of the area, noting overall recovery status.
- Species diversity of desirable vegetation.

3. Success Criteria

Cropland

Cropland areas are successfully revegetated when the replanted areas achieve crop production comparable to adjacent non-disturbed cultivated areas. The certificate holder shall consult with the landowner or farmer to determine whether these areas have been successfully revegetated and shall report to the Department on the success of revegetation in these areas.

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

Wildlife Habitat Areas

A wildlife habitat area is successfully revegetated when its habitat quality is equal to, or better than, the habitat quality of the reference area as measured by the site conditions listed above in subsection (2). When the Department finds that the condition of a revegetated wildlife habitat area satisfies the criteria for revegetation success, the Department will conclude that the certificate holder has met its restoration obligations for that area. If the Department finds that the landowner has converted a wildlife habitat area to a use that is inconsistent with the success criteria, the Department may conclude that the certificate holder has no further obligation to restore the area for wildlife habitat uses.

Revegetation will be considered successful when:

1. The percentage of vegetation cover by desirable native species in the sample plot is greater than or equal to the percentage of desirable native species cover in the reference plots.
2. The percentage of cover by invasive weed species in the sample plot is less than 10 percent; and
3. The percentage of bare soil in the sample plot is not greater than the percentage of bare soil in the reference plot, unless the percentage of desirable native species cover in the sample plot exceeds the percentage of desirable native species cover in the reference plots as described in #4 below.
4. If the percentage of desirable native species cover in the sample plot exceeds the percentage of desirable native species cover in the reference plots by 10 percent or more, then the percentage of bare soil in the sample plot may exceed the percentage of bare soil in the reference plot by up to 20 percent.

4. Remedial Action in Wildlife Habitat Areas

After each monitoring visit, the certificate holder's qualified investigator shall report to the certificate holder regarding the revegetation progress of each wildlife habitat area. The investigator shall make recommendations to the certificate holder for reseeding or other remedial measures for areas that are not showing progress toward achieving revegetation success.

Indications that an area is not showing progress toward achieving revegetation success include emergence of comparatively few plants one year after disturbance or low vegetation cover in the second monitoring year compared to reference plots and little increase in vegetation between the first and second monitoring year.

The certificate holder shall take appropriate action to meet the objectives of this revegetation plan. If soil compaction is suspected as the reason for lack of progress, the compacted areas may be deep tilled or scarified to reduce compaction, followed by re-seeding. The certificate holder's qualified investigator shall assess the vegetation that has appeared in the disturbed area to determine specific recommendations for remediation.

On an annual basis as part of the annual report on the facility, the certificate holder shall report to the Department the investigator's recommendations and the remedial actions taken. The Department may require re-seeding or other remedial measures in those areas that do not meet the success criteria.

If a wildlife habitat area is damaged by wildfire, the certificate holder shall work with the landowner to restore the damaged area. The certificate holder shall report to the Department on the damage caused by wildfire and the cause of the fire, if known. The certificate holder shall continue to report on revegetation progress as described in this plan.

If an area is not trending toward meeting the success criteria by the fifth monitoring year (and has not been converted by the landowner to an inconsistent use), the certificate holder may conclude that revegetation of the area was unsuccessful and propose appropriate mitigation for the loss of habitat quality or quantity. The certificate holder shall carry out mitigation actions approved by the Department, subject to review by the Oregon Energy Facility Council (Council).

V. Amendment of the Plan

This Revegetation Plan may be amended from time to time by agreement of the certificate holder and the Council. Such amendments may be made without amendment of the site certificate. The Council authorizes the Department to agree to amendments to this plan. The Department shall notify the Council of all amendments, and the Council retains the authority to approve, reject or modify any amendment of this plan agreed to by the Department.

Attachment E: Draft Amended Wildlife Monitoring and Mitigation Plan

Shepherds Flat Central: Wildlife Monitoring and Mitigation Plan

[REVISED ~~AUGUST 18, 2016~~TBD]

This plan describes wildlife monitoring that the certificate holder shall conduct during operation of Shepherds Flat Central (SFC).[1] The monitoring objectives are to determine whether the facility causes significant fatalities of birds and bats and to determine whether the facility results in a loss of habitat quality.

SFC consists of up to 116 wind turbines, two non-guyed meteorological (met) towers, a substation and other related or supporting facilities as described in the site certificate. The permanent facility components occupy a combined area of up to 72 acres.[2] The affected habitat lies within a micrositing area of approximately 11,769 acres.

The certificate holder shall use experienced and properly trained personnel (the "investigators") to conduct the monitoring required under this plan. The professional qualifications of the investigators are subject to approval by the Oregon Department of Energy (Department). For all components of this plan, the certificate holder shall hire independent third party investigators (not employees of the certificate holder) to perform monitoring tasks. The monitoring will be performed in a manner that minimizes agricultural crop loss and interference with agricultural and ranching activities.

The Wildlife Monitoring and Mitigation Plan for SFC has the following components:

1) Fatality monitoring program including:
    a) Removal trials
    b) Searcher efficiency trials
    c) Fatality search protocol
    d) Statistical analysis
2) Washington ground squirrel colony assessment
3) Raptor nest monitoring
4) Ongoing monitoring, reporting and handling of wildlife injuries and fatalities
~~4)~~5) Avian Collision Fatality Risk Mitigation (RFA2)

Based on the results of the monitoring programs, mitigation of significant impacts may be required. The selection of the mitigation actions should allow for flexibility in creating appropriate responses to monitoring results that cannot be known in advance. If the Department determines that mitigation is needed, the certificate holder shall propose appropriate mitigation actions to the Department and shall carry out mitigation actions approved by the Department, subject to review by the Oregon Energy Facility Council (Council).

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

[2] Estimates of the area that the facility components would occupy are shown in Tables 3 and 4 of the *Final Order on Amendment #1*.

1. Fatality Monitoring

(a) Definitions and Methods

Seasons

This plan uses the following dates for defining seasons:

Season	Dates and Duration
Spring	March 16 to May 15 (2 months)
Summer	May 16 to August 15 (3 months)
Fall Migration	August 16 to October 31 (2 ½ months)
Winter	November 1 to March 15 (4 ½ months)

Schedule

The investigators shall perform fatality monitoring for two years for each phase of construction. For each phase of construction, the first monitoring year will begin one month after the beginning of commercial operation of that phase; the second monitoring year will begin directly following the first year.

In each monitoring year, the investigators shall conduct fatality monitoring searches at the rates of frequency shown below. Over the course of one monitoring year, the investigators will conduct 16 searches, as follows:

Season	Frequency
Spring	2 searches per month (4 searches)
Summer	1 search per month (3 searches)
Fall	2 searches per month (5 searches)
Winter	1 search per month (4 searches)

Search Plots

The investigators shall conduct fatality monitoring within search plots. The certificate holder, in consultation with the investigators and the Oregon Department of Fish and Wildlife (ODFW), shall select search plots based on a systematic sampling design that ensures that the selected search plots are representative of the habitat conditions in different parts of the site.

Each search plot will contain one turbine. Search plots will be circular. Circular search plots will be centered on the turbine location and will have a radius equal to the maximum blade tip height of the turbine contained within the plot. “Maximum blade tip height” is the turbine hub-height plus one-half the rotor diameter. The certificate holder shall provide maps of the search plots to the Department before beginning fatality monitoring at the facility. The investigators shall use the same search plots for each search conducted during a single monitoring year.

Sample Size

The sample size for fatality monitoring is the number of turbines searched per phase per monitoring year. For each phase of construction, the investigators shall search a representative sample of the turbines that are built in that phase, according to the following schedule:

Number of Turbines Built	Sample Size: First Year	Sample Size: Second Year
50 to 116	50	50
less than 50	all turbines	all turbines

If 50 to 116 turbines are built in a phase, the investigators shall search a different representative sample of 50 turbines in the second year, to the extent possible based on the total number of turbines built.

(b) Removal Trials

The objective of the removal trials is to estimate the length of time avian and bat carcasses remain in the search area. Estimates of carcass removal rates will be used to adjust carcass counts for removal bias. "Carcass removal" is the disappearance of a carcass from the search area due to predation, scavenging or other means such as farming activity.

The investigators shall conduct carcass removal trials within each of the seasons defined above during the years in which fatality monitoring occurs. For each trial, the investigators shall use 10 to 15 carcasses of small, medium and large-bodied species.[3] Trial carcasses shall be placed at least 1,000 feet from any search plots and distributed proportionately within habitat categories and subtypes similar to the search plots.

The investigators shall use game birds or other legal sources of avian species as test carcasses for the removal trials, and the investigators may use carcasses found in fatality monitoring searches. The investigators shall select species with the same coloration and size attributes as species found within the site boundary. If suitable trial carcasses are available, trials during the fall season will include several small brown birds to simulate bat carcasses. Legally obtained bat carcasses will be used if available.

Trial carcasses will be marked discreetly for recognition by searchers and other personnel. Carcasses will be placed in a variety of postures to simulate a range of conditions. For example, birds will be: 1) placed in an exposed posture (e.g., thrown over the shoulder), 2) hidden to simulate a crippled bird (e.g., placed beneath a shrub or tuft of grass) or 3) partially hidden. The planted carcasses will be located randomly within the carcass removal trial plots. Trial carcasses will be left at the location until the end of the carcass removal trial.

An approximate schedule for assessing removal status is once daily for the first 4 days, and on days 7, 10, 14, 21, 30 and 45. This schedule may be adjusted depending on actual carcass removal rates, weather conditions and coordination with the other survey work. The condition of scavenged carcasses will be documented during each assessment, and at the end of the trial all traces of the carcasses will be removed from the site. Scavenger or other activity could result in complete removal of all traces of a carcass in a location or distribution of feathers and carcass parts to several locations. This distribution will not constitute removal if evidence of the carcass remains within an area similar in size to a search plot and if the evidence would be discernable to a searcher during a normal survey.

Before beginning removal trials for the second year of fatality monitoring, the certificate holder shall report the results of the first year removal trials to the Department and ODFW. In the

[3] To reduce the combined number of carcasses used in the removal trials and searcher efficiency trials, these trials may be coordinated with similar trials for Shepherds Flat North and Shepherds Flat South if the trials take place in the same year and after consultation with ODFW and approval by the Department.

report, the certificate holder shall analyze whether four removal trials per year, as described above, provides sufficient data to accurately estimate adjustment factors for carcass removal. The number of removal trials for the second year of fatality monitoring may be adjusted up or down, subject to the approval of the Department.

(c) Searcher Efficiency Trials

The objective of searcher efficiency trials is to estimate the percentage of bird and bat fatalities that searchers are able to find. The certificate holder shall conduct searcher efficiency trials on the fatality monitoring search plots in both grassland/shrub-steppe and cultivated agriculture habitat types. A pooled estimate of searcher efficiency will be used to adjust carcass counts for detection bias.

The investigators shall conduct searcher efficiency trials within each of the seasons defined above during the years in which the fatality monitoring occurs. Each trial will involve approximately 40 carcasses (approximately 160 carcasses per year). The searchers will not be notified of carcass placement or test dates. The investigators shall vary the number of trials per season and the number of carcasses per trial so that the searchers will not know the total number of trial carcasses being used in any trial.

For each trial, the investigators shall use small, medium and large-bodied species. The investigators shall use game birds or other legal sources of avian species as test carcasses for the efficiency trials, and the investigators may use carcasses found in fatality monitoring searches. The investigators shall select species with the same coloration and size attributes as species found within the site boundary. If suitable test carcasses are available, trials during the fall season will include several small brown birds to simulate bat carcasses. Legally obtained bat carcasses will be used if available. The investigators shall mark the test carcasses to differentiate them from other carcasses that might be found within the search plot and shall use methods similar to those used to mark removal test carcasses as long as the procedure is sufficiently discreet and does not increase carcass visibility.

The certificate holder shall distribute trial carcasses in varied habitat in rough proportion to the habitat types within the facility site. On the day of a standardized fatality monitoring search (described below) but before the beginning of the search, investigators will place efficiency trial carcasses randomly within search plots (one to three trial carcasses per search plot) within areas to be searched. If scavengers appear attracted by placement of carcasses, the carcasses will be distributed before dawn.

Efficiency trials will be spread over the entire season to incorporate effects of varying weather and vegetation growth. Carcasses will be placed in a variety of postures to simulate a range of conditions. For example, birds will be: 1) placed in an exposed posture (thrown over the shoulder), 2) hidden to simulate a crippled bird or 3) partially hidden.

The number and location of the efficiency trial carcasses found during the carcass search will be recorded. The number of efficiency trial carcasses available for detection during each trial will be determined immediately after the trial by the person responsible for distributing the carcasses. Following plot searches, all traces of test carcasses will be removed from the site.

If new searchers are brought into the search team, additional searcher efficiency trials will be conducted to ensure that detection rates incorporate searcher differences. The certificate

holder shall include a discussion of any changes in search personnel and any additional detection trials in the reporting required under Section 6~~5~~ of this plan.

Before beginning searcher efficiency trials for the second year of fatality monitoring, the certificate holder shall report the results of the first year efficiency trials to the Department and ODFW. In the report, the certificate holder shall analyze whether the efficiency trials as described above provides sufficient data to accurately estimate adjustment factors for carcass removal. The number of removal trials for the second year of fatality monitoring may be adjusted up or down, subject to the approval of the Department.

(d) Fatality Monitoring Search Protocol

The objective of fatality monitoring is to estimate the number of bird and bat fatalities that are attributable to facility operation as an indicator of the impact of the facility on habitat quality. The goal of bird and bat fatality monitoring is to estimate fatality rates and associated variances. The certificate holder shall conduct fatality monitoring using standardized carcass searches according to the schedule described above.

Personnel trained in proper search techniques ("the searchers") will conduct the carcass searches by walking parallel transects approximately 20 feet apart within the search plots. A searcher will walk at a rate of approximately 45 to 60 meters per minute along each transect searching both sides out to three meters for casualties. Search area and speed may be adjusted by habitat type after evaluation of the first searcher efficiency trial.

Searchers shall flag all avian or bat carcasses discovered. Carcasses are defined as a complete carcass or body part, 10 or more feathers, or three or more primary feathers in one location. When parts of carcasses and feathers from the same species are found within a search plot, searchers shall make note of the relative positions and assess whether or not these are from the same fatality.

All carcasses (avian and bat) found during the standardized carcass searches will be photographed, recorded and labeled with a unique number. Searchers shall make note of the nearest two or three structures (turbine, power pole, fence, building or overhead line) and the approximate distance from the carcass to these structures. The species and age of the carcass will be determined when possible. Searchers shall make note of the extent to which the carcass is intact and an estimation of time since death. Searchers shall describe all evidence that might assist in determination of cause of death, such as evidence of electrocution, vehicular strike, wire strike, predation or disease, will be described. When assessment of the carcass is complete, all traces of it will be removed from the site.

Each carcass will be bagged and frozen for future reference and possible necropsy. A copy of the data sheet for each carcass will be kept with the carcass at all times. For each carcass found, searchers will record species, sex and age when possible, date and time collected, location, condition (e.g., intact, scavenged, feather spot) and any comments that may indicate cause of death. Searchers will photograph each carcass as found and will map the find on a detailed map of the search area showing the location of the wind turbines and associated facilities. The certificate holder shall coordinate collection of state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of federally-listed endangered or threatened species and Migratory Bird Treaty Act

protected avian species with the U.S. Fish and Wildlife Service (USFWS). The certificate holder shall obtain appropriate collection permits from ODFW and USFWS.

The investigators shall calculate fatality rates using the statistical methods described in Section (f), except that the investigators may use different notation or methods that are mathematically equivalent with prior approval of the Department. In making these calculations, the investigators may exclude carcass data from the first search of each turbine (to eliminate possible counting of carcasses that were present before the turbine was operating).

The investigators shall estimate the number of avian and bat fatalities attributable to operation of the facility based on the number of avian and bat fatalities found at the facility site. All carcasses located within areas surveyed, regardless of species, will be recorded and, if possible, a cause of death determined based on blind necropsy results. If a different cause of death is not apparent, the fatality will be attributed to facility operation. The total number of avian and bat fatalities will be estimated by adjusting for removal and searcher efficiency bias.

On an annual basis, the certificate holder shall report an estimate of fatalities in eight categories: 1) all birds, 2) small birds, 3) large birds, 4) raptors, 5) grassland birds, 6) nocturnal migrants, 7) State Sensitive Species listed under OAR 635-100-0040 and 8) bats. The certificate holder shall report annual fatality rates on both a per-MW and per-turbine basis.

(e) Incidental Finds and Injured Birds

The searchers might discover carcasses incidental to formal carcass searches (e.g., while driving within the project area). For each incidentally discovered carcass, the searcher shall identify, photograph, record data and collect the carcass as would be done for carcasses within the formal search sample during scheduled searches. If the incidentally discovered carcass is found within a formal search plot, the fatality data will be included in the calculation of fatality rates. If the incidentally discovered carcass is found outside a formal search plot, the data will be reported separately. The certificate holder shall coordinate collection of incidentally discovered state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of incidentally discovered federally-listed endangered or threatened species and Migratory Bird Treaty Act protected avian species with the USFWS.

The certificate holder shall develop and follow a protocol for handling injured birds. Any injured native birds found on the facility site will be carefully captured by a trained project biologist or technician and transported to a qualified rehabilitation specialist approved by the Department.[4] The certificate holder shall pay costs, if any, charged for time and expenses related to care and rehabilitation of injured native birds found on the site, unless the cause of injury is clearly demonstrated to be unrelated to the facility operations.

[4] Approved specialists include Lynn Tompkins (wildlife rehabilitator) of Blue Mountain Wildlife, a wildlife rehabilitation center in Pendleton and the Audubon Bird Care Center in Portland. The certificate holder must obtain Department approval before using other specialists.

(f) Statistical Methods for Fatality Estimates[5]

The estimate of the total number of wind facility-related fatalities is based on:

(1) The observed number of carcasses found during standardized searches during the two monitoring years for which the cause of death is attributed to the facility.[6]
(2) Searcher efficiency expressed as the proportion of planted carcasses found by searchers.
(3) Removal rates expressed as the estimated average probability a carcass is expected to remain in the study area and be available for detection by the searchers during the entire survey period.

Definition of Variables

The following variables are used in the equations below:

c_i	the number of carcasses detected at plot *i* for the study period of interest (e.g., one year) for which the cause of death is either unknown or is attributed to the facility
n	the number of search plots
k	the number of turbines searched (includes the turbines centered within each search plot and a proportion of the number of turbines adjacent to search plots to account for the effect of adjacent turbines on the search plot buffer area)
$\bar{c}$	the average number of carcasses observed per turbine per year
s	the number of carcasses used in removal trials
s_c	the number of carcasses in removal trials that remain in the study area after 40 days
se	standard error (square of the sample variance of the mean)
t_i	the time (days) a carcass remains in the study area before it is removed
$\bar{t}$	the average time (days) a carcass remains in the study area before it is removed
d	the total number of carcasses placed in searcher efficiency trials
p	the estimated proportion of detectable carcasses found by searchers
I	the average interval between searches in days
$\hat{\pi}$	the estimated probability that a carcass is both available to be found during a search and is found
m_t	the estimated annual average number of fatalities per turbine per year, adjusted for removal and observer detection bias
C	nameplate energy output of turbine in megawatts (MW)

[5] These statistical methods derive from the *Draft Avian and Bat Monitoring Plan for the Stateline Wind Project*, January 10, 2001 (prepared by FPL Energy, WEST Inc. and Northwest Wildlife Consultants). The present form of the description of statistical methods is based on revisions by the Council in the *Klondike III Wildlife Monitoring and Mitigation Plan*, June 30, 2006.
[6] If a different cause of death is not apparent, the fatality will be attributed to facility operation.

Observed Number of Carcasses

The estimated average number of carcasses ($\bar{c}$) observed per turbine per year is:

$$\bar{c} = \frac{\sum_{i=1}^{n} c_i}{k}. \tag{1}$$

Estimation of Carcass Removal

Estimates of carcass removal are used to adjust carcass counts for removal bias. Mean carcass removal time ($\bar{t}$) is the average length of time a carcass remains at the site before it is removed:

$$\bar{t} = \frac{\sum_{i=1}^{s} t_i}{s - s_c}. \tag{2}$$

This estimator is the maximum likelihood estimator assuming the removal times follow an exponential distribution and there is right-censoring of data. Any trial carcasses still remaining at 40 days are collected, yielding censored observations at 40 days. If all trial carcasses are removed before the end of the trial, then s_c is 0, and $\bar{t}$ is just the arithmetic average of the removal times. Removal rates will be estimated by carcass size (small and large), habitat type and season.

Estimation of Observer Detection Rates

Observer detection rates (i.e., searcher efficiency rates) are expressed as p, the proportion of trial carcasses that are detected by searchers. Observer detection rates will be estimated by carcass size, habitat type and season.

Estimation of Facility-Related Fatality Rates

The estimated per turbine annual fatality rate (m_t) is calculated by:

$$m_t = \frac{\bar{c}}{\hat{\pi}}, \tag{3}$$

where $\hat{\pi}$ includes adjustments for both carcass removal (from scavenging and other means) and observer detection bias assuming that the carcass removal times t_i follow an exponential distribution. Under these assumptions, this detection probability is estimated by:

$$\hat{\pi} = \frac{\bar{t} \cdot p}{I} \cdot \left[\frac{\exp\left(I / \bar{t} \right) - 1}{\exp\left(I / \bar{t} \right) - 1 + p} \right]. \tag{4}$$

The estimated per MW annual fatality rate (m) is calculated by:

$$m = \frac{m_t}{C}. \tag{5}$$

The final reported estimates of *m*, associated standard errors and 90% confidence intervals will be calculated using bootstrapping (Manly 1997). Bootstrapping is a computer simulation technique that is useful for calculating point estimates, variances and confidence intervals for complicated test statistics. For each iteration of the bootstrap, the plots will be sampled with replacement, trial carcasses will be sampled with replacement and $\bar{c}$, $\bar{t}$, p, $\hat{\pi}$ and m will be calculated. A total of 5,000 bootstrap iterations will be used. The reported estimates will be the means of the 5,000 bootstrap estimates. The standard deviation of the bootstrap estimates is the estimated standard error. The lower 5th and upper 95th percentiles of the 5000 bootstrap estimates are estimates of the lower limit and upper limit of 90% confidence intervals.

Nocturnal Migrant and Bat Fatalities

Differences in observed nocturnal migrant and bat fatality rates for lit turbines, unlit turbines that are adjacent to lit turbines and unlit turbines that are not adjacent to lit turbines will be compared graphically and statistically.

(g) Mitigation

The certificate holder shall use a worst-case analysis to resolve any uncertainty in the results and to determine whether the data indicate that additional mitigation should be considered. The Department may require additional, targeted monitoring if the data indicate the potential for significant impacts that cannot be addressed by worst-case analysis and appropriate mitigation.

Mitigation may be appropriate if fatality rates exceed a "threshold of concern."[7] For the purpose of determining whether a threshold has been exceeded, the certificate holder shall calculate the average annual fatality rates for species groups after two years of monitoring. Based on current knowledge of the species that are likely to use the habitat in the area of the facility, the following thresholds apply to SFC:

[7] The Council adopted "thresholds of concern" for raptors, grassland species and state sensitive avian species in the Final Order on the Application for the Klondike III Wind Project (June 30, 2006) and for bats in the Final Order on the Application for the Biglow Canyon Wind Farm (June 30, 2006). As explained in the Klondike III order: "Although the threshold numbers provide a rough measure for deciding whether the Council should be concerned about observed fatality rates, the thresholds have a very limited scientific basis. The exceeding of a threshold, by itself, would not be a scientific indicator that operation of the facility would result in range-wide population level declines of any of the species affected. The thresholds are provided in the WMMP to guide consideration of additional mitigation based on two years of monitoring data."

Species Group	**Threshold of Concern** (fatalities per MW)
Raptors (All eagles, hawks, falcons and owls, including burrowing owls.)	0.09
Raptor species of special concern (Swainson's hawk, ferruginous hawk, peregrine falcon, golden eagle, bald eagle, burrowing owl and any federal threatened or endangered raptor species.)	0.06
Grassland species (All native bird species that rely on grassland habitat and are either resident species occurring year round or species that nest in the area, excluding horned lark, burrowing owl and northern harrier.)	0.59
State sensitive avian species listed under OAR 635-100-0040 (Excluding raptors listed above.)	0.2
Bat species as a group	2.5

If the data show that a threshold of concern for a species group has been exceeded, the certificate holder shall implement additional mitigation if the Department determines that mitigation is appropriate based on analysis of the data, consultation with ODFW and consideration of any other significant information available at the time. In addition, the Department may determine that mitigation is appropriate if fatality rates for individual avian or bat species (especially State Sensitive Species) are higher than expected and at a level of biological concern. If the Department determines that mitigation is appropriate, the certificate holder, in consultation with the Department and ODFW, shall propose mitigation measures designed to benefit the affected species. The certificate holder shall implement mitigation as approved by the Department, subject to review by the Council. The Department may recommend additional, targeted data collection if the need for mitigation is unclear based on the information available at the time. The certificate holder shall implement such data collection as approved by the Council.

Mitigation should be designed to benefit the affected species group. Mitigation may include, but is not limited to, protection of nesting habitat for the affected group of native species through a conservation easement or similar agreement. Tracts of land that are intact and functional for wildlife are preferable to degraded habitat areas. Preference should be given to protection of land that would otherwise be subject to development or use that would diminish the wildlife value of the land. In addition, mitigation measures might include: enhancement of a protected tract that is degraded by weed removal and control; increasing the diversity of native grasses and forbs; planting sagebrush or other shrubs; constructing and maintaining artificial nest structures for raptors; improving wildfire response; and conducting or making a contribution to research that will aid in understanding more about the affected species and its conservation needs in the region.

(h) Additional Mitigation

Two years of monitoring showed an exceedance of the threshold of concern for the raptor group. The Department determined that mitigation is appropriate. Certificate holder proposed mitigation measures, and consulted with the Department and ODFW with respect to their design and implementation. Therefore certificate holder shall:

- Amend the SFC Habitat Mitigation Plan to include tree planting and monitoring.

- Install bird flight diverters, pole-to-pole, on the transmission line segments adjacent to turbines 372 and 332. The diverters shall be of the same type and at the same spacing as those installed at other location in the facility.
- Contribute $1,000 annually to the Rowena Wildlife Clinic (or equivalent rehabilitation facility approved by the Department and ODFW). Such contributions shall continue for the life of the facility.

2. Washington Ground Squirrel Assessment

A qualified professional biologist (investigator) will assess the status of that portion of the Washington ground squirrel (WGS) colony located within the site boundary.[8] The colony located on-site represents a small outpost of the larger complex off-site. It may expand or contract over the survey years as rainfall and vegetation affect the total population of the complex. There should be sufficient data collected before facility components are installed in the colony's vicinity for the investigator to assess natural colony fluctuation.

The investigator shall assess the status of the WGS colony when the squirrels are active (approximately mid-March through May) beginning in the first active period after the effective date of the site certificate for SFC. The colony will be assessed annually thereafter through the second year after the turbines closest to the WGS colony become commercially operational.

During each assessment, the investigator shall monitor WGS activity to determine the extent of the on-site colony and estimate the number of squirrels present. The investigator shall examine the surroundings for evidence of project-caused conditions that might increase erosion or result in a decline in vegetation quality and adversely affect the colony.

3. Raptor Nest Monitoring

The objectives of raptor nest surveys are: (1) to estimate the size of the local breeding populations of raptor species that nest on the ground or aboveground in trees or other aboveground nest locations in the vicinity of the facility; and (2) to determine whether operation of the facility results in a reduction of nesting activity or nesting success in the local populations of the following raptor species: Swainson's hawk, golden eagle, ferruginous hawk and burrowing owl.

The certificate holder shall conduct short-term and long-term monitoring. The certificate holder's qualified investigators will use aerial and ground surveys to evaluate nest success by gathering data on active nests, on nests with young and on young fledged. The investigators will analyze the data as described in Section 3(c) and will share the data with state and federal biologists.

(a) Short-Term Monitoring

Short-term monitoring will be done in two monitoring seasons. The first monitoring season will be in the first raptor nesting season after completion of construction of SFC. The

[8] The site certificate application for the Shepherds Flat Wind Farm included a baseline assessment of the WGS colony. Weisskopf et al., *Shepherds Flat Washington Ground Squirrel and Burrowing Owl Surveys*, May 27, 2007 (App Supp, Exhibit P, Attachment P-5a).

second monitoring season will be in the fourth year after construction is completed. The investigators will analyze two years of data after the second monitoring season.

Survey Protocol for Raptor Species that Nest Aboveground

During each monitoring season, the investigators will conduct a thorough ground survey for raptor nests in late May or early June and additional surveys as described in this section. The survey area is the area within the SFC site and a 2-mile buffer around the site. All nests discovered during pre-construction surveys and any nests discovered during post-construction surveys, whether active or inactive, will be given identification numbers. Nest locations will be recorded on U.S. Geological Survey 7.5-minute quadrangle maps. Global positioning system coordinates will be recorded for each nest. Locations of inactive nests will be recorded because they could become occupied during future years.

Determining nest *occupancy* will likely require at least two visits to each nest. For occupied nests, the certificate holder will determine nesting *success* by a minimum of one ground visit to determine species, number of young and young fledged. "Nesting success" means that the young have successfully fledged (the young are independent of the core nest site). Nests that cannot be monitored due to the landowner denying access will be checked from a distance where feasible.

Survey Protocol for Burrowing Owls

The investigators will monitor burrowing owl nests according to the following protocol. The investigators will monitor all nests discovered during pre-construction surveys and any additional burrowing owl nest sites that are discovered during any wildlife monitoring tasks conducted under this plan. All nests will be given identification numbers. Nest locations will be recorded on U.S. Geological Survey 7.5-minute quadrangle maps. Global positioning system coordinates will be recorded for each nest site. Coordinates for ancillary burrows used by one nesting pair or a group of nesting pairs will also be recorded. Locations of inactive nests will be recorded because they could become occupied during future years.

For occupied nests, the certificate holder will determine nesting *success* by a minimum of one ground visit to determine species, number of young and young fledged. "Nesting success" means that the young have successfully fledged (the young may or may not be independent of the core nest site). Three visits to the nest sites may be necessary to determine outcome. Nests that cannot be monitored due to the landowner denying access will be checked from a distance where feasible.

(b) Long-Term Monitoring

In addition to the two years of post-construction raptor nest surveys described above, the certificate holder will conduct long-term raptor nest surveys at five-year intervals for the life of the facility.[9] Investigators will conduct the first long-term raptor nest survey in the raptor nesting season of the ninth year after construction is completed and will repeat the survey at five-year intervals thereafter. In conducting long-term surveys, the investigators will follow the same survey protocols as described above in Section 3(a) unless the investigators propose alternative protocols that are approved by the Department. In developing an alternative protocol, the

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

investigators will consult with ODFW. The investigators will analyze the data after each year of long-term raptor nest surveys.

(c) Analysis

The investigators will analyze the raptor nesting data to determine whether a reduction in either nesting success or nest use has occurred in the survey area. If the analysis indicates a reduction in nesting success or nest use by Swainson's hawks, golden eagles, ferruginous hawks or burrowing owls, then the certificate holder will propose appropriate mitigation for the affected species as described in Section 3(d) and will implement mitigation as approved by the Department, subject to review by the Council

Any reduction in nesting success or nest use could be due to operation of SFC or some other cause. The investigators will attribute the reduction to operation of SFC unless the investigators demonstrate, and the Department agrees, that the reduction was due to a different cause. At a minimum, if the analysis shows that a Swainson's hawk, golden eagle, ferruginous hawk or burrowing owl has abandoned a nest territory within the facility site or within ½ mile of the facility site or has not fledged any young over two successive surveys within that same area, the investigators will assume the abandonment or unsuccessful fledging is due to operation of the facility unless another cause can be demonstrated convincingly.

Given the low raptor nesting densities in the area, statistical power to detect a relationship between distance from a wind turbine and nesting parameters (e.g., number of fledglings per reproductive pair) will be very low. Therefore, impacts may have to be judged based on trends in the data, results from other wind energy facility monitoring studies and literature on what is known regarding the populations in the region.

(d) Mitigation

The certificate holder will propose mitigation for the affected species in consultation with the Department and ODFW and will implement mitigation as approved by the Council. In proposing appropriate mitigation, the certificate holder will advise the Department if any other wind project in the area is obligated to provide mitigation for a reduction in raptor nesting success at the same nest site. Mitigation should be designed to benefit the affected species or contribute to overall scientific knowledge and understanding of what causes nest abandonment or nest failure. Mitigation may be designed to proceed in phases over several years. It may include, but is not limited to, additional raptor nest monitoring, protection of natural nest sites from human disturbance or cattle activity (preferably within the general area of the facility) or participation in research projects designed to improve scientific understanding of the needs of the affected species.

4. Ongoing Reporting and Handling of Wildlife Injuries and Fatalities

The certificate holder will implement an ongoing monitoring program for avian and bat casualties found during operation of the facility. The certificate holder will train facility personnel in the methods and practices needed to carry out this program. Facility personnel shall monitor the areas around all facility structures that may present a collision risk to avian and bat species, including turbine towers, meteorological towers, aboveground transmission lines, the substation and the field workshop. The monitoring program will include initial response, handling and reporting of bird and bat carcasses discovered incidental to maintenance operations

("incidental finds"). Maintenance personnel will follow the certificate holder's protocol for handling injured birds as described in Section 1(d).

All avian and bat carcasses discovered by maintenance personnel will be photographed and data will be recorded as would be done for carcasses within the formal search sample during scheduled searches as described in Section 1(d). Maintenance personnel will notify a project biologist of incidental finds. The project biologist must be a qualified independent professional biologist who is not an employee of the certificate holder. The project biologist (or the project biologist's experienced wildlife technician) will collect the carcass or will instruct maintenance personnel to have an on-site carcass handling permittee collect the carcass. The certificate holder's on-site carcass handling permittee must be a person who is listed on state and federal scientific or salvage collection permits and who is available to process (collect) the find on the day it is discovered. The find must be processed on the same day as it is discovered. The certificate holder shall coordinate collection of state endangered, threatened, sensitive or other state protected species with ODFW. The certificate holder shall coordinate collection of federally-listed endangered or threatened species and Migratory Bird Treaty Act protected avian species with the USFWS.

During the years in which fatality monitoring occurs, if there are incidental finds outside the search plots for the fatality monitoring searches, the data will be reported separately from fatality monitoring data. Data on incidental finds within search plots will be included in the calculation of fatality rates.

The Department may determine that mitigation is appropriate if avian or bat fatalities are higher than expected and at a level of biological concern. If the Department determines that mitigation is appropriate, the certificate holder, in consultation with the Department and ODFW, shall propose mitigation measures designed to benefit the affected species. The certificate holder shall implement mitigation as approved by the Department, subject to review by the Council.

5. Avian Collision Fatality Risk Mitigation

To address potential indirect impacts of bird and bat collision fatality risk, the certificate holder shall implement the following avian collision fatality risk mitigation:

Within 1-year following completion of the O&M demonstration activity for wind turbines 368 and 370, as approved in the Final Order on RFA2, the certificate holder shall coordinate with ODOE in consultation with ODFW to determine an appropriate financial contribution or level of participation in a research project designed to improve scientific understanding of larger turbine components on birds and bats. As an alternative, the certificate holder may coordinate with ODOE in consultation with ODFW to determine an appropriate financial contribution to be remitted to the Rowena Wildlife Clinic (or equivalent rehabilitation facility approved by ODOE and ODFW).

6. Data Reporting

The certificate holder will report wildlife monitoring data and analysis to the Department. The certificate holder shall notify USFWS and ODFW immediately if any federal or state endangered or threatened species are killed or injured on the facility site. The certificate holder shall report fatality monitoring program data, WGS colony assessment information, raptor nest monitoring data and data on avian and bat casualties found by facility personnel. The certificate

holder may include the reporting of wildlife monitoring data, analysis, and additional mitigation measures in the annual report required under OAR 345-026-0080 or submit this information as a separate document at the same time the annual report is submitted. In addition, the certificate holder shall provide to the Department any data or record generated by the investigators in carrying out this monitoring plan upon request by the Department.

7. Amendment of the Plan

This Wildlife Monitoring and Mitigation Plan may be amended from time to time by agreement of the certificate holder and the Council. Such amendments may be made without amendment of the site certificate. The Council authorizes the Department to agree to amendments to this plan and to mitigation actions that may be required under this plan. The Department shall notify the Council of all amendments and mitigation actions, and the Council retains the authority to approve, reject or modify any amendment of this plan or mitigation action agreed to by the Department.