BEFORE THE
ENERGY FACILITY SITING COUNCIL
OF THE STATE OF OREGON

In the Matter of Request for Amendment 5 for the Stateline Wind Project Site Certificate	))))	FINAL ORDER ON REQUEST FOR AMENDMENT 5 TO THE SITE CERTIFICATE

May 17, 2019

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I. INTRODUCTION

The Energy Facility Siting Council (Council or EFSC) issues this final order, in accordance with Oregon Revised Statute (ORS) 469.405(1) and Oregon Administrative Rule (OAR) 345-027-0071, based on its review of Request for Amendment 5 (RFA5) to the Stateline Wind Project site certificate, as well as comments and recommendations received by specific state agencies and local governments. The certificate holder for the facility is FPL Energy Stateline II, Inc. (certificate holder), a wholly owned subsidiary of NextEra Energy Resources, LLC.

The certificate holder requests that the Council approve changes to the site certificate to:

- Change facility geographic unit name from Stateline 3 to Vansycle II;
- Upgrade or repower 43 existing wind turbines including removal and replacement of existing nacelles (gearbox) and rotors (turbine blades and hub) that would increase maximum blade tip height from 416 to 440 feet, rotor diameter from 305 to 354 feet; and decrease minimum aboveground blade tip clearance from 110 to 85 feet;
- Redevelop previously approved temporary access roads and laydown areas; and
- Add and amend site certificate conditions (Existing Condition 37(c); New Conditions 137 and 138)

Based upon review of this amendment request, in conjunction with comments received by members of the public and recommendations received by state agencies and local governments during the draft proposed order comment period, the Council approves and grants a fifth amended site certificate for the Stateline Wind Project, subject to the existing, new and amended conditions set forth in this final order.

I.A. Name and Address of Certificate Holder

FPL Energy Stateline II, Inc.
700 Universe Blvd.
Juno Beach, FL 33408

Parent Company of the Certificate Holder

NextEra Energy Resources, LLC
700 Universe Blvd.
Juno Beach, FL 33408

Certificate Holder Contact

Jesse Marshall
NextEra Energy Resources, LLC
700 Universe Blvd
Juno Beach, FL 33408

I.B. Description of the Approved Facility

The Stateline Wind Project (facility) is an operational wind energy generation facility located in Umatilla County, with a peak generating capacity of up to 222 megawatts (MW) of electricity. The facility consists of two geographic units, Stateline 1&2 and Stateline 3.

Stateline 1&2 consists of 186 Vestas V47 wind turbines, with a peak generating capacity of approximately 123 MW. Stateline 3 consists of 43 Siemens wind turbines with a peak generating capacity of up to 98.9 MW.

I.C. Description of Approved Facility Site Location

The facility is located in Umatilla County, north and east of Helix, Oregon, as presented in Figure 1, *Facility Regional Location*. The communities closest to the facility include City of Helix, Oregon, and census-designated place in Walla Walla County, Washington - Touchet.

1 **Figure 1: Facility Regional Location**

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I.D. Procedural History

The Council issued a Site Certificate for the Stateline Wind Project (facility) on September 14, 2001, authorizing construction and operation of a wind energy generation facility, with up to 127 wind turbines with a peak generating capacity of 83.8 MW. The Council issued the First Amended Site Certificate on May 17, 2002, authorizing an increase in the total number of wind turbines from 127 to 187 and an increase in facility peak generating capacity from 83.8 to 123 MW. The Council issued the Second Amended Site Certificate on June 6, 2003, authorizing construction and operation of Stateline 3, which included 279 0.66 MW wind turbines. The Council issued the Third Amended Site Certificate on June 20, 2005, authorizing an extension of the Stateline 3 construction deadlines; and the Fourth Amended Site Certificate on March 27, 2009 authorizing a partial site certificate transfer of certificate holder for Stateline 3 from FPL Vansycle to FPL Energy Stateline II, Inc. The Department received a preliminary Request for Amendment 5 on June 28, 2018, which is the subject of this order.

II. AMENDMENT PROCESS

II.A. Requested Amendment

Name Change of Stateline 3 (Geographic Facility Unit)

The certificate holder requests Council approval to change the name of Stateline 3 to Vansycle II, for internal operational purposes and because it more accurately reflects the location of the geographic facility unit.

Wind Turbine Repower

The certificate holder requests Council approval to upgrade or repower 43 existing wind turbines by removing and replacing the wind turbine hub (blade and rotor) and gearbox (nacelles). Wind turbine repowering would require haul trucks, boom trucks and cranes. A crane would be mobilized and new gearboxes, blades and hub would be delivered onsite. A boom truck or telehandler would be used to unload and assemble new turbine blades and hub into a complete rotor. Gearboxes and assembled hubs would be set up on the existing access road adjacent to the wind turbine. A crane would be used to lower rotors and gearbox, which would then be placed next to the crane; and, then used to pick up and set the new rotor. Either a boom truck or telehandler would be used to disassemble the replaced rotor (blade and hub); materials would then be transported offsite for proper disposal at a licensed disposal or recycling facility.

The replacement of turbine blades would increase the maximum blade tip height from 416 to 440 feet, increase rotor diameter from 305 to 354 feet; and, would reduce the minimum aboveground blade tip clearance from 111 to 85 feet.

Temporary disturbance of previously approved temporary laydown areas

The certificate holder requests Council approval to develop 1.4 acre temporary laydown or staging areas at each of 43 wind turbine tower location (totaling approximately 60 acres), and an additional 20-acre staging area for temporary equipment storage and parking.

Temporary disturbance of previously approved temporary access roads

The certificate holder requests Council approval to temporarily widen approximately 15 miles of existing, 16-foot wide access roads to 33 feet, plus an additional 3 feet of shoulder on each side (39 feet total) (totaling approximately 42 acres). The temporarily widened roads would be revegetated after disturbance in accordance with the Revegetation Plan, as provided in Attachment E of this order.

Temporary road widening would be to the same design specifications (e.g., graded level to the current road profile) as the existing road. Temporary widening of the access roads prior to construction would generally consist of clearing vegetation by mowing and minor grading of the road to extents similar to what was previously done during the original road construction activities in 2009.

Gravel is typically not applied along graded road shoulders; however, consistent with the original facility construction, gravel would be used as needed after clearing the laydown area, on specific locations to improve any required turning radii within the road network, and on certain turnouts that transition off county or state roads. Any construction of road approaches from public road rights-of-way would be permitted as appropriate and in accordance with conditions stipulated within Umatilla County Construction of Road Approaches and Private Road Crossings Permit and the Oregon Department of Transportation (ODOT) State Highway Approach Permit.

Amended Conditions

The certificate holder proposes two new conditions; these two conditions would require monitoring and inspection of the repowered wind turbine foundations and anchor bolts in accordance with a specified protocol provided by the certificate holder. These conditions, as further modified for clarification, are described and represented in Section III.C., *Structural Standard* of this order. The certificate holder also requests to amend Condition 37 based on changes in maximum blade tip height, from 416 to 440 feet, of the proposed repowered wind turbines.

II.B. Recommended Amended Site Certificate Format

The existing site certificate, as amended in March 2009, contains seven separate sections of conditions that either apply generally to the facility during design, construction, operation and retirement or that were imposed during one of the four site certificate amendments and were intended to apply specifically to components approved through the individual site certificate amendment.

Based on the potential impacts from construction of the proposed RF5 facility modifications, and for clarification during condition compliance, Council imposes specific conditions that would apply prior to and during construction of the proposed RFA5 facility modifications. Previously imposed operational and retirement conditions would continue to apply to the facility, with proposed changes, in their entirety. The recommended new pre-construction and construction conditions are presented in Section X of the draft amended site certificate, provided as Attachment A to this order.

Previously imposed conditions that would continue to apply to the proposed RFA5 facility modifications are denoted in the draft amended site certificate by citation at the end of an identified applicable condition with ”[AMD5].”

II.C. 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 345-027-0051. 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 include 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 process. The certificate holder has the burden of justifying the appropriateness of the Type B review process as described in OAR 345-027-0051(3). The Department may consider, but is not limited to, the factors identified in OAR 345-027-0057(8) when determining whether to process an amendment request under Type B review.

On April 17, 2018, 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 345-027-0057(8) factors, the amendment request could be reviewed under the Type B review process. On June 21, 2018, the Department determined that Type A review be maintained because the reasons and level of analysis provided by the certificate holder was not sufficient to conclude that: the proposed modifications were not complex; that the anticipated level of interest from members of the public and reviewing agencies in the proposed modifications would be low; and that there would not likely be potential significant adverse impacts from the proposed modifications.

On June 28, 2018, the certificate holder submitted to the Department a request for reconsideration of the Type A review determination, and included its preliminary RFA5 (pRFA5) to support review of the request. On January 9, 2019, based on review of pRFA5 and consultation with reviewing agencies, the Department reaffirmed its determination that Type A review be maintained. On January 11, 2019, the certificate holder requested to refer the Department's January 9, 2019 Type A review determination to Council. At its February 22, 2019 meeting, the Council concurred with the certificate holder's request and affirmed that RFA5 be processed under the Type B review process. Therefore, this order presents the procedural history for the Type B review process.

As described above, the Department received preliminary RFA5 (pRFA5) on June 28, 2018. The Department initiated consultation with select reviewing agencies and posted an announcement

on its project website notifying the public that pRFA5 had been received. Pursuant to OAR 345-027-0063(2), on July 20, 2018, the Department determined pRFA5 to be incomplete and issued requests for additional information.[1] The certificate holder provided responses to the information request on September 19, 2018.

After reviewing the responses to its information request, on January 9, 2019, the Department determined the RFA to be complete. Under OAR 345-027-0063(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 RFA5 on January 17, 2019, which was then posted on the Department's project website with an announcement notifying the public that the complete RFA had been received.

Reviewing Agency Comments on Preliminary Request for Amendment 5

As presented in Attachment B of the final order, the Department received comments on pRFA5 from the following reviewing agencies and Special Advisory Group:

- Oregon Department of Environmental Quality
- Oregon Department of Aviation
- Oregon Department of Fish and Wildlife
- Umatilla County Board of Commissioners (Special Advisory Group)
- Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
- Oregon Department of Geology and Mineral Industries (DOGAMI)

Comments from these agencies are incorporated into the analysis of Council standards below, as applicable, and provided in Attachment B.

II.D. Council Review Process

On March 29, 2019, the Department issued the draft proposed order, and a notice of a 31-day comment period on RFA5 and the draft proposed order (notice), extending from March 29 through April 29, 2019. 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).

The Department received 7 comments on the record of the draft proposed order including two comments from members of the public, two comments from Tribal Governments, two

[1] SWPAMD5 Completeness Letter and RAI Table 2018-07-20.

comments from reviewing agencies, and a comment from the certificate holder.[2] Attachment C of this order includes copies of the comments submitted on the record of the draft proposed order and an index presenting date comment received, and commenter name and organization. Issues raised that are within the Council's jurisdiction and related to the proposed amendment are addressed under the applicable standards section below.[3]

On May 3, 2019, the Department issued the proposed order, taking into consideration comments received "on the record of the draft proposed order" including any public comments; and comments from reviewing agencies, special advisory groups, and Tribal Governments. Concurrent with the issuance of the proposed order, the Department issued a Notice of Proposed Order. The Notice of Proposed Order 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, a list of reviewing agencies as defined in OAR 345-001-0010(52), and the individuals that commented on the record of the draft proposed order. The proposed order recommended Council approve the fifth amended site certificate.

At its May 17, 2019 meeting in Condon, Oregon, in accordance with OAR 345-027-0075, Council reviewed the proposed order and adopted the proposed order, with modifications, as the final order and granted a fifth amended site certificate.[4]

Judicial review of the Council's final order either granting an amended site certificate shall be as provided in ORS 469.403, provided that only those persons, including the certificate holder, who provided written comment on the draft proposed order by the written comment deadline may seek judicial review as provided in ORS 469.403 and issues eligible for judicial review are limited to the issues raised in that person's written comments. The issue must be within the jurisdiction of the Council and must be raised with sufficient specificity to afford the decision maker an opportunity to respond to the issue. The issue must raise a significant issue of fact or law that may affect the Council's determination that the facility, with the change proposed by

[2] Comments on the draft proposed order were received from: Cindy Severe (public), Oregon and Southern Idaho District Council of Laborers (public), Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, Umatilla County Planning Department, and the certificate holder.

[3] SWPWAMD5. DPO Comment Public Oregon and Southern Idaho District Council of Laborers. 2019-04-29. In a comment on the draft proposed order, the Oregon and Southern Idaho District Council of Laborers request Council review of community impacts of the proposed repowering activity, specifically wages/benefits, use of Oregon's existing workforce, use of Oregon Training and Apprenticeship programs, and use of responsible contractors. ORS 469.401(4) states "nothing in ORS chapter 469 shall be construed to preempt the jurisdiction of any state agency or local government over matters that are not include in and governed by the site certificate or amended site certificate. Such matters include but are not limited to employee health and safety, building code compliance, wage and hour or other labor regulations, local government fees and charges or other design or operational issues that do not relate to siting the facility." Therefore, Council does not have jurisdiction over wage and hour or other labor regulations; this comment is not addressed further in this order.

[4] May 17, 2019 Council minutes/audio recording. Approved modifications were incorporated into Section III.K. *Historic, Cultural and Archeological Resources* of this order.

the amendment, meets applicable EFSC standards set forth in OAR Chapter 345, Divisions 22, 24 and 26 as well as all other applicable statutes, rules and standards (including those of other state or local agencies).

II.E. Applicable Division 27 Rule Requirements

A site certificate amendment is necessary under OAR 345-027-0050(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 changes: (1) could result in a significant adverse impact to a resource or interest protected by a Council standard that the Council has not addressed in an earlier order; (2) could impair the certificate holder's ability to comply with a site certificate condition; or (3) could require new conditions or modification to existing conditions in the site certificate, or could meet more than one of these criteria.

The Type B amendment review process (consisting of rules 345-027-0059, -0060, -0063, -0065, -0068, -0072, and -0075) shall apply to the Council's review of a request for amendment that the Department or the Council approves for Type B review under 345-027-0057. The Council reviewed RFA5 under the Type B review process based on the factors listed in OAR 345-027-0057(8) and Council concurrence with the certificate holder's Type B review request.[5]

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."[6] The Council implements this statutory framework by adopting findings of fact, conclusions of law, and conditions of approval concerning the certificate holder's ability to satisfy the requirements of Council's Standards for Siting Facilities at OAR 345, Divisions 22, 24, 26, and 27.

III.A. 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:*

[5] The Council concurred that RFA5 be reviewed under Type B process after considering the: (a) the complexity of the proposed change; (b) the anticipated level of public interest in the proposed change; (c) the anticipated level of interest by reviewing agencies; (d) the likelihood of significant adverse impact; and (e) the type and amount of mitigation, if any.

[6] ORS 469.401(2).

(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 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.

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(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 facility modifications comply with the requirements of EFSC statutes and the siting standards adopted by the Council and that the proposed facility modifications comply with all other Oregon statutes and administrative rules applicable to the issuance of an amended site certificate for the facility, with proposed changes.

The requirements of OAR 345-022-0000 are discussed in the sections that follow. The Department consulted with other state agencies and Umatilla County Board of Commissioners (Special Advisory Group) during review of pRFA5 to aid in the evaluation of whether the proposed RF5 facility modifications would maintain compliance with statutes, rules and ordinances otherwise administered by other agencies. Additionally, in many circumstances the Department and Council rely upon these reviewing agencies' special expertise in evaluating compliance with the requirements of Council standards.

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

Pursuant to Mandatory Conditions at OAR 345-025-0006(3)(a), the certificate holder is required to design, construct, operate and retire proposed facility modifications substantially as described in the amendment request. Consistent with this mandatory condition, the Council imposes the following condition based on the changes in maximum blade tip height, hub height, rotor diameter, and minimum aboveground blade tip clearance from the proposed wind turbine repowering:

> **Condition 137:** The certificate holder shall construct the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, substantially as described in Request for Amendment 5 of the site certificate, subject to the following restrictions and compliance with other site certificate conditions. Before beginning construction, the certificate holder shall provide to the Department equipment specifications and a description of the wind turbine dimensions to demonstrate compliance with this condition.
>
> a) Vansycle II wind turbine hub height must not exceed 262.5 feet and the maximum blade tip height must not exceed 440 feet.
> b) Vansycle II wind turbine rotor diameter must not exceed 354 feet.
> c) Vansycle II wind turbine minimum blade tip clearance must not be lower than 85 feet above ground.
>
> [AMD5]

Certificate Expiration [OAR 345-027-0013]

A site certificate, or amended site certificate, becomes effective upon execution by the Council Chair and the certificate holder. A site certificate, or amended site certificate, expires if construction has not commenced on or before the construction commencement deadline, as established in the site certificate and statutorily required under ORS 469.401(2).

The Council's imposition of construction deadlines in the amended site certificate should reflect a balance between the Council's concern regarding potential circumstantial changes (regulatory and environmental) and the individual circumstances of the amendment request. In addition, the Council acknowledges that there are a number of unforeseen factors that can delay a certificate holder's commencement of construction and completion, including but not limited to financial, economic, or technological changes. The Council also notes that while each amendment request is evaluated on its own facts, historic Council decisions on construction and commencement deadlines were reviewed to inform this analysis. In most instances of decisions on Application for Site Certificates (ASCs), Council has required construction commencement and completion of wind energy facilities within three and six years, respectively, after the effective date of the site certificate and in some instances the

completion deadline is established based on date of construction commencement and not effective date of site certificate.

In RFA5 Section 4.2., *Construction Schedule*, the certificate holder explains that the duration to complete the proposed RFA5 facility modifications would be approximately 4 months, and suggests that activities would commence in 2019, which has already passed. The Council grants a construction commencement and completion deadline based upon three years following the amended site certificate execution date and an additional three years following date of construction commencement. This timeframe would provide sufficient time for satisfying pre-construction condition requirements established in the amended site certificate, allow sufficient time to obtain required permits not governed by the site certificate, and would be consistent with past Council requirements.[7]

In accordance with OAR 345-025-0006(4), the Council imposes the following conditions:

> **Condition 138:** The certificate holder shall begin construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, within three years after the effective date of the amended site certificate [June 12, 2022]. The certificate holder shall notify the Department when construction of the of the facility modifications, as approved in Request for Amendment 5, commences. Under OAR 345-015-0085(8), the amended site certificate is effective upon execution by the Council Chair and the certificate holder.
> [Mandatory Condition OAR 345-025-0006(4); AMD5]
>
> **Condition 139:** The certificate holder shall complete construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, within three years following the date of construction commencement [June 12, 2025]. The certificate holder shall promptly notify the Department of the date of completion of construction of the Vansycle II facility modifications, as approved in Request for Amendment 5.
> [Mandatory Condition OAR 345-025-0006(4); AMD5]

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 RFA5, 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.

[7] SWPAMD5. Request for Amendment 5 Exhibit E. 2019-01-17. RFA Exhibit E identifies that federal approval from Federal Aviation Administration (7460-1; 7460-2) and Federal Communications Commission (Coordination License) would be required; and, a federally delegated permit (National Pollutant Discharge Elimination System Stormwater Permit) from the Oregon Department of Environmental Quality (DEQ) would be required.

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

The Council has also 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. The certificate holder must construct the proposed RFA5 facility modifications substantially as described in the amendment request and the certificate holder must construct, operate, and retire the proposed RFA5 facility modifications in accordance with all applicable rules adopted by the Council in OAR Chapter 345, Division 26.[8]

Conclusions of Law

Based on the foregoing findings of fact and conclusions of law, and subject to compliance with the existing and new conditions, the Council finds that the certificate holder would satisfy the requirements of OAR 345-022-0000.

III.B. 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

[8] Applicable rule requirements established in OAR Chapter 345, Division 26 include OAR 345-026-0048, OAR 345-026-0080, OAR 345-026-0105, and OAR 345-026-0170.

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.

Findings of Fact

Subsections (1) and (2) of the Council's Organizational Expertise standard require that the applicant (certificate holder) demonstrate its ability to design, construct operate and retire the facility with proposed changes in compliance with Council standards and all site certificate conditions, and in a manner that protects public health and safety, as well as its ability to restore the facility site to a useful, non-hazardous condition. The Council may consider the certificate holder's experience and past performance in constructing, operating and retiring other facilities in determining compliance with the Council's Organizational Expertise standard. Subsections (3) and (4) address third party permits.

Compliance with Council Standards and Site Certificate Conditions

The Council may consider a certificate holder's past performance, including but not limited to the quantity or severity of any regulatory citations in the construction or operation a facility, type of equipment, or process similar to the facility, in evaluating whether a proposed change may impact the certificate holder's ability to design, construct and operate a facility, with proposed changes, in compliance with Council standards and site certificate conditions.[9]

FPL Energy Stateline II, Inc. relies upon the organizational expertise and experience of its parent company, NextEra Energy Resources, LLC (NextEra). NextEra has not received any regulatory citations, nor has it received any North American Energy Reliability Corporation (NERC) violations, during operation of the facility.

In RFA5, the certificate holder describes its wind turbine repower experience, which includes blade and gearbox replacement of approximately 200 wind turbines across nine sites in Texas, totaling 1,591 MW of wind energy. In general, the certificate holder describes its experience in wind facility construction and operation and refers to its 175 facilities located in 29 states, totaling more than 9,365 wind turbines as demonstrating adequate experience necessary to

[9] OAR 345-021-0010(1)(d)(D)

complete the proposed RFA5 facility modifications in compliance with Council standards. Council previously imposed Condition 46, which would apply to proposed RFA5 facility modifications, and requires that the certificate holder provide the qualification of major construction contractors, demonstrating a proven record of environmental stewardship and compliance.

Based upon compliance with the existing condition, and the compliance history of the certificate holder and its parent company, the Council finds that the proposed RFA5 facility modification would not impact the certificate holder's ability to design, construct, operate and retire the facility in compliance with Council standards and site certificate conditions.

Public Health and Safety

The proposed change in wind turbine size could result in health and safety risks from blade failure, structural and reliability concerns, ice throw, risks to public and private providers of air transportation and agricultural services, and risks to public providers of fire service during tower rescue events. The Council's evaluation of these risks is presented in Section III.M, *Public Services* and Section III.P.1, *Public Health and Safety Standards for Wind Facilities* of this order. Based on the reasoning and analysis provided in the sections described, the Council finds that the proposed RFA5 facility modifications, including changes in maximum blade tip height and minimum aboveground blade tip clearance would not impact the certificate holder's ability to design, construct, and operate the facility in a manner that protects public health and safety.

Ability to Restore the Site to a Useful, Non-Hazardous Condition

As described in Section III.G, *Retirement and Financial Assurance*, the proposed RFA5 facility modifications would not be expected to impact the certificate holder's ability to restore the facility site to a useful, non-hazardous condition.

ISO 900 or ISO 14000 Certified Program

OAR 345-022-0010(2) is not applicable because the certificate holder has not proposed to design, construct or operate the amended facility according to an ISO 9000 or ISO 14000 certified program.

Third-Party Permits

OAR 345-022-0010(3) addresses the requirements for potential third party permits. In RFA5, the certificate holder describes that the proposed RFA5 facility modifications would not require any additional third-party permits that would normally be governed by the site certificate.

Conclusions of Law

Based on the evidence in the record, and subject to compliance with existing conditions of approval, the Council finds that the certificate holder would continue to satisfy the requirements of the Council's Organizational Expertise standard.

III.C. 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.[10] 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.

The analysis area for the Structural Standard is the area within the site boundary.

The certificate holder completed consultation with the Oregon Department of Geology and Mineral Industries (DOGAMI) across multiple communication exchanges, occurring on March 5 and 7, 2018, which is further described below.

Potential Seismic, Geological and Soil Hazards

OAR 345-022-0020 requires the certificate holder to adequately characterize the potential seismic, geologic and soil hazard risks of the site. These hazards were assessed based on the certificate holder's 2009 site-specific geotechnical investigation completed as a pre-construction requirement to satisfy Condition 132, prior to the construction of Stateline 3. The 2009 site-specific geotechnical investigation was prepared by professional registered engineers of GN Northern, Inc., and reviewed and approved by the Department in consultation with DOGAMI. Because construction and operation of the proposed RFA5 facility modifications would occur within previously approved site boundary areas, the Council considers the 2009 site-specific geotechnical investigation adequate and accurate for establishing the potential seismic, geological and soil hazards of the site.

Based on the 2009 report and as summarized in RFA5, seismic hazards in the analysis area result from three seismic sources: interpolate events, intraslab events, and crustal events. There is limited earthquake history in the area, with the most notable event occurring in 1936, approximately 15 miles to the northeast of the site. Small, active faults are believed to occur in the general area of the site; however, the activity of these faults is generally very low. Moreover, because groundwater is generally not present in the soil veneer atop the basalt bedrock, other hazards associated with a seismic event, such as liquefaction, lateral spreading, and subsidence, do not present a seismic hazard at the site. Additionally, the site boundary is well away from the Oregon coastline, and is not within a DOGAMI-defined tsunami evacuation zone (DOGAMI 2017); therefore, tsunami inundation is not considered a hazard.

Based on the 2009 site-specific geotechnical investigation, and as summarized in RFA5, the area is comprised of a series of flood basalts covered by deposits of loess – silt and fine sand deposited by wind. Basalt bedrock in the area is generally not prone to large-scale landslides.

[10] 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.

In RFA5, the certificate holder describes that there is no evidence of ancient slope movement at the site and is not expected at the site.
Through the DOGAMI consultation, the certificate holder confirmed that no additional geotechnical or geologic hazards analysis were necessary to inform the analysis under the Council's standard; however, DOGAMI requested, and the certificate holder provided, an evaluation of the loading conditions of the repowered wind turbines on the existing foundations, using current code requirements and relevant state-of-practice methods. The results of this evaluation are presented below.

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

The proposed repowering of 43 existing wind turbines would include removal of existing turbine blades and nacelles and replacement with heavier blades and nacelles, utilizing the originally installed wind turbine foundation. To demonstrate that the proposed repowered wind turbines 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, Barr Engineering, to prepare a detailed structural assessment of the existing foundations in accordance with 2018 standards; the assessment was conducted by calculation only and did not include a physical inspection or condition assessment of the existing foundations. The assessment 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 top reinforcing steel bars within the concrete foundation were overstressed by 9 percent at the cutoff location. Barr Engineering identified, though, that the determination of "overstress" was based on Code 1a of American Concrete Institute (ACI) 318-11, Building Code Requirements for Structural Concrete, 2011, which requires the location of bar cutoffs be offset by a specified distance from the point where the reinforcing bars are no longer required, intended to apply for structurally redundant systems such as building frames and not necessarily wind turbine foundations.[11]

Nonetheless, to address any potential risk of foundation integrity from overstressed reinforcement bars, the certificate holder proposes two conditions, which the Council modified for clarification, and imposes as follows:

[11] SWPAMD5 Request for Amendment 5 Exhibit H. 2019-01-09.

Condition 140: During operation of Vansycle II wind turbines, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Perform inspections of the Vansycle II wind turbine foundations as part of its maintenance program in order to identify changes in the foundation conditions. Inspections will be performed in accordance with the procedures described in document titled: Tower Anchor Bolt Testing/Tensioning and Foundation Grout/Concrete Inspection, Document Number PGD-00-PM-WX-9360100, Power Generation Division, Revision Number 1.5, Revision Date: 1/18/2018.

(b) In Year 1 of operation of Vansycle II repowered wind turbines, inspections conducted in accordance with sub(a) will be completed for each of the 43 wind turbines. In Years 2 and 3, the certificate holder may reduce the number of inspections to 10 percent, or 5 wind turbines. If all inspections in Years 1, 2 and 3 pass the acceptance criteria, inspections of a 10 percent sample size, or 5 wind turbines, may occur every 5 years for the life of the facility.

(c) Results of foundation inspections will be provided to the Department and DOGAMI in accordance with inspection schedule identified in Document Number PGD-00-PM-WX-9360100 and in the annual report. If signs of distress (noticeable degradation) are observed in the Vansycle II wind turbine foundations during the inspections and it is determined by the facility's Power Generation Division engineers and management that repairs are needed, the certificate holder will provide a remedial action plan to be reviewed by the Department and DOGAMI as soon as practicable.

(d) Any alteration of the inspection procedures and schedule described in Document Number PGD-00-PM-WX-9360100 will require notification to and consultation with the Department and DOGAMI.

[AMD5]

Condition 141: During operation of the Vansycle II wind turbines, as approved in the Fifth Amended Site Certificate the certificate holder shall:

(a) Perform wind turbine anchor bolt tension inspections in accordance with the technical manual titled: Tower Anchor Bolt Testing/Tensioning and Foundation Grout/Concrete Inspection, Document Number PGD-00-PM-WX-9360100, Power Generation Division, Revision Number 1.5, Revision Date 1/18/2018.

(b) In Year 1 of operation of Vansycle II repowered wind turbines, inspections conducted in accordance with sub(a) will be completed for each of the 43 wind turbines. In Years 2 and 3, the certificate holder may reduce the number of inspections to 10 percent, or 5 wind turbines. If all inspections in Years 1, 2 and 3 pass the acceptance criteria, inspections of a 10 percent sample size, or 5 wind turbines, may occur every 5 years for the life of the facility.

(c) Any alteration of the inspection schedule and tensioning procedures described in Document Number PGD-00-PM-WX-9360100 will require notification to and consultation with the Department and DOGAMI.

[AMD5]

Integration of Disaster Resilience Design

Disasters such as those related to future climatic conditions, which may include 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 site. In addition, seismic activity is not expected at the site. However, in the event of a seismic or other natural disaster, the certificate holder refers to tasks and actions it would adhere to in the event of an emergency, as presented in Attachment D, Emergency Action Plan, of this order. This plan outlines the procedures to effectively respond to a natural disaster, including on-site safety requirements and communication protocol. The Emergency Action Plan also addresses how to safely return to operations following an emergency.

Additionally, the certificate holder describes that if an earthquake were to occur, wind turbine tower and foundation inspections would be conducted to assess necessity of repairs. It is anticipated that an inspection of each wind turbine would take approximately 4 hours to complete, and the repowered wind turbines would commence with a phased start-up procedure: wind turbines within an individual array (or string) would commence operations once all the wind turbines within that array passed inspection. Assuming a 10-hour workday and the absence of any repairs that may be necessary, the certificate holder anticipates that the facility would be fully operational within approximately 2 weeks following a natural disaster event. If repairs are required, the amount of time needed to perform those activities was not estimated, as it is highly dependent on the type of repair needed and the availability of parts and trained personnel that may be required to complete the repairs.

Based upon compliance with existing and new site certificate conditions, and because the proposed amendments would not change the site boundary or micrositing corridor area previously evaluated, the Council finds that the proposed facility modifications 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.

Conclusions of Law

Based on the foregoing analysis, and in compliance with OAR 345-022-0020(2), the Council imposes new conditions to address the Structural Standard.

III.D. 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.

Findings of Fact

The Soil Protection standard requires the Council to find that the design, construction, and operation of a proposed facility, or facility with proposed changes, is not likely to result in significant adverse impacts to soil.

The analysis area for the Soil Protection standard, as defined in the project order, includes the area within the site boundary.

The certificate holder conducted a desktop review using Natural Resources Conservation Service data to confirm major soil types and current land use within the analysis area. Major soil types include Lickskillet very stony loam, Ritzville silt loam, and Walla Walla, which are the same major soil types previously identified within the analysis area; current land use within the analysis area is described as agriculture (winter wheat) and cattle grazing.

Potential Significant Adverse Impacts to Soil

Potential impacts to soils within the analysis area (site boundary) could occur during construction and operation of the proposed RFA5 facility modifications from wind or water erosion, compaction, changes in drainage patterns, or spills or releases of chemicals or other liquid materials.

The certificate holder describes that unnecessary soil compaction would be minimized by scheduling activities during the dry season, as feasible, and using heavy equipment and other vehicles with larger tires with lower air pressure, as appropriate, to allow for better flotation and reduce pressure on the soil surface. Proper tire pressure would be checked and maintained as temperatures fluctuate throughout repowering activities. Traffic management would be implemented to minimize trips and to keep trucks and vehicles in the same tracks as much as possible to and from individual work sites to limit the area of compaction. The certificate holder further describes that compacted soils would be scarified, loosening potentially compacted soils, during revegetation activities and as prescribed in the Revegetation Plan provided in Attachment E of this order.

In RFA5 Exhibit I, the certificate holder identifies that prior to construction of RFA5 facility modifications, a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit would be obtained from the Oregon Department of Environmental Quality

(DEQ), which would include an approved Erosion Sediment Control Plan (ESCP). The certificate holder provides a draft ESCP in RFA5 Exhibit I, which is also provided in Attachment H of this order. The certificate holder relies upon the measures imposed in the 1200-C NPDES permit and ESCP, such as mulching, sediment traps, and mats and reseeding for minimizing potential erosion impacts. Council previously imposed Condition 60, which would continue to apply to the proposed RFA5 facility modifications and would ensure that a DEQ-issued 1200-C NPDES permit is obtained prior to construction and that erosion control measures are implemented in accordance with the ESCP.

Potential impacts to soils from spills could occur during wind turbine repowering when oil is drained from the removed wind turbine gearbox. However, the certificate holder asserts that equipment oil draining would be conducted in accordance with the procedures outlined in a construction related Spill Prevention Control and Countermeasures Plan, as required per existing Condition 32.

Based upon compliance with the existing site certificate conditions, the Council finds that the design, construction and operation of the proposed RFA5 facility modifications would not result in a significant adverse impact to soils.

Conclusions of Law

Based on the foregoing findings of fact and conclusions of law, and subject to compliance with existing site certificate conditions, the Council finds that the proposed RFA5 facility modifications would comply with the Council's Soil Protection standard.

III.E. 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).

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Findings of Fact

The Land Use standard requires the Council to find that the proposed RFA5 facility components would continue to comply with local applicable substantive criteria, as well as the statewide planning goals adopted by the Land Conservation and Development Commission (LCDC).[12]

The analysis area for land use is the area within and extending ½ -mile from the site boundary.

Local Applicable Substantive Criteria

On July 28, 2000, during the review of the Application for Site Certificate (ASC), the Council appointed the Umatilla County Board of Commissioners as the Special Advisory Group (SAG) for the facility. On behalf of and as authorized by the SAG, the Umatilla County Planning Director identified applicable substantive criteria to be considered during the ASC phase and through subsequent amendment requests has identified changes in local code to be considered applicable substantive criteria. In a comment provided on pRFA5 from the Umatilla County Board of Commissioners, no new applicable substantive criteria were identified.

Table 1, *Applicable Substantive Criteria – Umatilla County*, below, summarizes the applicable substantive criteria Council previously evaluated and determined the certificate holder could satisfy.

Table 1: Applicable Substantive Criteria – Umatilla County

Umatilla County Development Ordinance (UCDO)	
Section 152.060	Conditional Uses allowed on lands zoned for Exclusive Farm Use (EFU)
Section 152.061	Standards for all Conditional Uses on EFU Lands
Section 152.615	Additional Conditional Use Permit Restrictions
Section 152.616	Conditional Uses Permitted

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

Table 1: Applicable Substantive Criteria – Umatilla County

Umatilla County Comprehensive Plan (UCCP)
Citizen Involvement: Policy 1 and Policy 5
Agriculture: Policies 1, 8 and 17
Open Space, Scenic & Historic Areas, and Natural Areas: Policies 1(a), 5 (a & b), 6(a), 8(a), 9(a), 10 (c, d & e), 20(a), 20(b) (1-8), 22, 23(a), 24(a), 26, 37 & 38(a-c), 39(a) & 42(a)
Air, Land, Water Quality: Policies 1, 7 & 8
Natural Hazards: Policies 1 & 4
Recreational Needs: Policy 1
Economy of the County: Policies 1, 4 & 8(a-f)
Public Facilities & Services: Policies 1(a-d), 2, 9 & 19
Transportation: Policy 18 and 20
Energy Conservation: Policy 1

The Council reviewed the applicable substantive criteria as presented in Table 1: *Applicable Substantive Criteria – Umatilla County* above. Based on its review, because the site boundary was previously approved and would not change, the proposed RFA5 facility modifications would not be expected to impact the certificate holder's ability to satisfy requirements of the applicable substantive criteria listed above, except for potential impacts under Umatilla County Development Ordinance (UCDO) Section 152.061 and the setback requirements established in UCDC Section 152.616(HHH)(6), which are evaluated below.

The facility is located within Exclusive Farm Use (EFU) zoned land. The proposed RFA5 facility modifications are evaluated as a "commercial utility facility for the purpose of generating power for public use by sale," and specifically as a wind power generation use under that broader conditional use category. Therefore, the following EFU-zone conditional use criteria apply:

> *UCDO Section 152.061 Standards for Conditional Uses on EFU lands.*
>
> *The following limitations shall apply to all conditional uses in an EFU zone. Uses may be approved only where such uses:*
>
> *(A) Will not force a significant change in accepted farm or forest practices on surrounding lands devoted to farm or forest use; and*
>
> *(B) Will not significantly increase the cost of accepted farm or forest practices on lands devoted to farm or forest use.*

UCDO Section 152.061(A) and (B) establish approval standards for all conditional uses within EFU zoned land. As described in RFA5 Exhibit K, the proposed RF5 facility modifications would result in temporary impacts in EFU zoned land, which could impact the availability of areas for farming and result in weed dispersal, compaction and erosion. The certificate holder describes that temporarily disturbed areas would be managed for weeds and revegetated in accordance with the Revegetation Plan, as provided in Attachment E of this order; and affirms that dust control measures and erosion control measures in accordance with existing Conditions 60 and 61 would be implemented.

The certificate holder addresses potential impacts from the increase in maximum blade tip height of the wind turbines, from 416 to 440 feet, to aerial sprayers within the surrounding area and describes that the height increase would not affect how the aerial sprayers operate or create new vertical obstacles to spraying. The certificate holder affirms that there would not be changes to the facility layout and therefore the proposed facility modifications would not cause changes to field access roads or result in changes to patterns of cultivation, seeding, fertilization and harvesting.

Based upon the information provided in RFA5 Exhibit K related to impacts on farm uses and farm practices, and the analysis provided above, and subject to compliance with previously imposed conditions, the Council finds that the facility, with proposed changes, would satisfy the conditional use standards at UCDO Section 152.061(A) and (B).

152.616(HHH)(6) Standards/Criteria of Approval.

The following requirements and restrictions apply to the siting of a Wind Power Generation Facility:

(a) Setbacks. The minimum setback shall be a distance of not less than the following:

(1) From a turbine tower to a city urban growth boundary (UGB) shall be two miles. The measurement of the setback is from the centerline of a turbine tower to the edge of the UGB that was adopted by the city as of the date the application was deemed complete.

(2) From turbine tower to land zoned Unincorporated Community (UC) shall be 1 mile.

(3) From a turbine tower to a rural residence shall be 2 miles. For purposes of this section, "rural residence" is defined as a legal, existing single family dwelling meeting the standards of §152.058 (F)(1)-(4), or a rural residence not yet in existence but for which a zoning permit has been issued, on a unit of land not a part of the Wind Power Generation Facility, on the date a Wind Power Generation Facility application is submitted. For purposes of this section, the

setback does not apply to residences located on properties within the Wind Power Generation Facility project application. The measurement of the setback is from the centerline of the turbine tower to the center point of the rural residence.

(4) From a turbine tower to the boundary right-of-way of County Roads, state and interstate highways, 110% of the overall tower-to-blade tip height. Note: The overall tower-to-blade tip height is the vertical distance measured from grade to the highest vertical point of the blade tip.

(5) From tower and project components, including transmission lines, underground conduits and access roads, to known archeological, historical or cultural sites shall be on a case by case basis, and for any known archeological, historical or cultural site of the Confederated Tribes of the Umatilla Indian Reservations the setback shall be no less than 164 feet (50 meters).

UCDO Section 152.616(HHH)(6)(a) includes standards for conditional uses within EFU zoned land, specifically setback requirements for wind turbines. As presented above, UCDO Section 152.616(HHH)(6)(a)(1), (2) and (3) impose setback distances from turbine towers within Umatilla County to the city's urban growth boundary; lands zoned Unincorporated Community; and, rural residences, respectively. Because these setback distances are specific to turbine tower location, and because the tower location would not change as a result of the proposed wind turbine repowering, the Council finds that the proposed wind turbine repowering would not impact the certificate holder's ability to satisfy these setback requirements.

UCDO Section 152.616(HHH)(6)(a)(4) imposes setback distances based on 110 percent of the overall tower to blade tip height to county, state and interstate highway road rights-of-way. Council previously imposed Condition 126 requiring that the certificate holder comply with this setback restriction. Because this setback is based on maximum blade tip height, which would change based on the proposed wind turbine repowering, the changes included in RFA5 could impact the certificate holder's ability to satisfy the setback requirement. The certificate holder affirms that two wind turbines, once repowered, would not comply with this setback but state that they are working with Umatilla County to meet the setback requirement, though evidence of meeting the setback or otherwise satisfying the requirement has not been provided to the Council.[13] Because the setback requirement has not yet been satisfied, the Council imposes Condition 142 as follows:

Condition 142: Prior to construction associated with repowering of Vansycle II wind turbines number 1 and 21, the certificate holder shall:

(a) Provide documentation demonstrating that the county road right of way adjacent to: 1) Gerking Flat Road and, 2) Butler Grade Road have been relocated or adjusted

[13] SWPAMD5. DPO Comment Reviewing Agency Umatilla County Waldher. 2019-04-26. In a comment on the draft proposed order, Umatilla County Planning Director Robert Waldher confirmed that the certificate holder had been

such that wind turbines 1 and 21 satisfy the setback requirements to county road rights of way pursuant to UCDC Section 152.616(HHH)(6)(a)(4). Wind turbines not meeting the setback requirements from county road rights-of-way are precluded from increasing the maximum blade tip height from 416 to 440 feet through repower activities.

(b) The documentation shall include written verification from Umatilla County that confirms the county road rights of way have been adjusted. [AMD5]

Based on the evaluation provided above, and subject to compliance with the new condition, the Council finds that the proposed RFA5 facility modifications would continue to satisfy Umatilla County setback standards.

Conclusions of Law

Based on the foregoing findings and the evidence in the record, and subject to compliance with existing and new site certificate conditions, the Council finds that the facility, with proposed changes, would continue to comply with the Land Use standard.

III.F. 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;

working with the county to meet the setback requirement for two wind turbines (Turbines 1 and 21), but that evidence satisfying the requirement had not yet been provided. Based on this comment, revisions to the recommended Condition 142(a) were provided, which were incorporated into the proposed and final order.

(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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Findings of Fact

The Protected Areas standard requires the Council to find that, taking into account mitigation, the design, construction, and operation of a facility are not likely to result in significant adverse impacts to any protected area as defined by OAR 345-022-0040. Impacts to protected areas are evaluated based on identification of protected areas, pursuant to OAR 345-022-0040, within the analysis area and an evaluation of the following potential impacts during facility construction and operation: excessive noise, increased traffic, water use, wastewater disposal, visual impacts of facility structures or plumes, and visual impacts from air emissions.

In accordance with OAR 345-001-0010(59)(e) and consistent with the study area boundary, the analysis area for protected areas is the area within and extending 20 miles from the site boundary.

In RFA5, the certificate holder references eight protected areas within the analysis area that were previously evaluated by Council in the 2009 *Final Order on Amendment 4*. These protected areas are presented in Table 2, *Protected Areas within Facility Analysis Area and Distance from Site Boundary* below.

Table 2: Protected Areas within Analysis Area and Distance from Site Boundary

Protected Area (OAR Reference)	Distance from Site Boundary (in miles)
McNary National Wildlife Refuge	5.2
McDonald Bridge Wildlife Area	7.5
Whitman Mission National Historic Site	9.1
Columbia Basin Agricultural Research Center – Pendleton, Oregon	12.0
South Fork Walla Walla Area of Critical Environmental Concern	16.6

Table 2: Protected Areas within Analysis Area and Distance from Site Boundary

Protected Area (OAR Reference)	Distance from Site Boundary (in miles)
North Fork Umatilla Wilderness	17.6
Cold Springs National Wildlife Refuge	18.5
Hat Rock State Park	18.6

As presented in Table 2, *Protected Areas within Analysis Area and Distance from Site Boundary,* all of the protected areas are located at distances of 5 miles or greater from the facility site boundary, and as described in RFA5 Exhibit L, the closest protected area to a repowered wind turbine would be located at distances of eight miles or greater. Potential adverse impacts to protected areas during construction and operation of the proposed RFA5 facility modifications from noise, traffic, water use and wastewater disposal, and visual are discussed below.

Potential Noise Impacts

The significance of potential noise impacts to identified protected areas is based on the magnitude and likelihood of the impact on the affected human population or natural resource that uses the protected area.[14] The nearest protected area to a repowered wind turbine, McDonald Bridge Wildlife Area, is located approximately 8.3 miles away.

Construction

The proposed repowering of 43 existing wind turbines would generate construction-related noise. Construction related noise would be short-term and intermittent and would result from site clearing, equipment delivery, repowering, and revegetation. Construction equipment noise levels presented in RFA5 Exhibit X range from 73 to 88 dBA at 50 feet, for a welder and dozer, respectively; and from 41 to 56 dBA at 2,000 feet for a welder and dozer. Based on noise attenuation at a distance greater than 8-miles, the Council finds that construction of proposed RFA5 facility modifications would not be likely to result in significant adverse noise impacts at the McDonald Bridge Wildlife Area. Because the other protected areas within the analysis area are located at greater distances from the proposed RFA5 facility modifications than the McDonald Bridge Wildlife Area, the Council concludes that potential construction-related noise impacts at these protected areas would also not likely be potentially significant or adverse.

[14] The Protected Areas standard requires the Council to find that, taking into account mitigation, the design, construction and operation of a facility are not likely to result in significant adverse impacts to any protected area as defined by OAR 345-022-0040. OAR 345-001-0010(53) defines "significant" as: "having an important consequence, either alone or in combination with other factors, based upon the magnitude and likelihood of the impact on the affected human population or natural resources, or on the importance of the natural resources affected, considering the context of the action or impact, its intensity and the degree to which possible impacts are caused by the proposed action. Nothing in this definition is intended to require a statistical analysis of the magnitude or likelihood of a particular impact."

Operation

The proposed wind turbine repowering would result in potential maximum overall A-weighted sound power level output of 107 dBA. In RFA5, the certificate holder provides a noise analysis of the 43 proposed repowered wind turbines, with existing collector substation noise sources, based on the following sound power levels:

- Modified Noise Source: 43 repowered SG 2.3-108 wind turbines at 107 dBA, based on wind speeds 10 meters above ground
- Existing Noise Source: 1 substation transformer at 108 dBA

In RFA5, the certificate holder provides a noise modeling analysis for operational noise, which demonstrates that operational noise from the proposed RFA5 facility modifications would be inaudible at all protected areas. Therefore, the Council finds that operation of the proposed RFA5 facility modifications would not be likely to result in significant adverse noise impacts to any protected areas within the analysis area.

Potential Traffic Impacts

Construction

The proposed larger wind turbines would generate construction-related traffic, but not that would substantially differ from the impacts included in the *Final Order on Amendment 4*. Therefore, the Department presents a summary of the previous assessment for reference.

The certificate holder previously described that construction-related trucks would utilize Interstate 84 (I-84) to State Route 11 (alternatively from I-84 to State Route 331 to State Route 11), then north to State Route 334 and west to Gerking Flat Road.[15] The designated route does not pass through any protected areas. Council previously found that temporary increases in traffic during construction would not result in traffic delays affecting access to protected areas and would not result in a significant adverse impact to any protected area. Based on Council's previous reasoning and because construction-related traffic would not utilize primary roads used to access protected areas within the analysis area, the Council continues to find that construction-related traffic impacts would not be likely to result in a significant adverse traffic impact to protected areas within the analysis area.

[15] SWPAMD4. Final Order on Amendment 4. 2009

Operation

The proposed RFA5 facility modifications would not result in changes to operational-related traffic. Therefore, the finds that operational-traffic impacts would not impact protected areas within the analysis area.

Potential Water Use and Wastewater Disposal Impacts

Construction and Operation

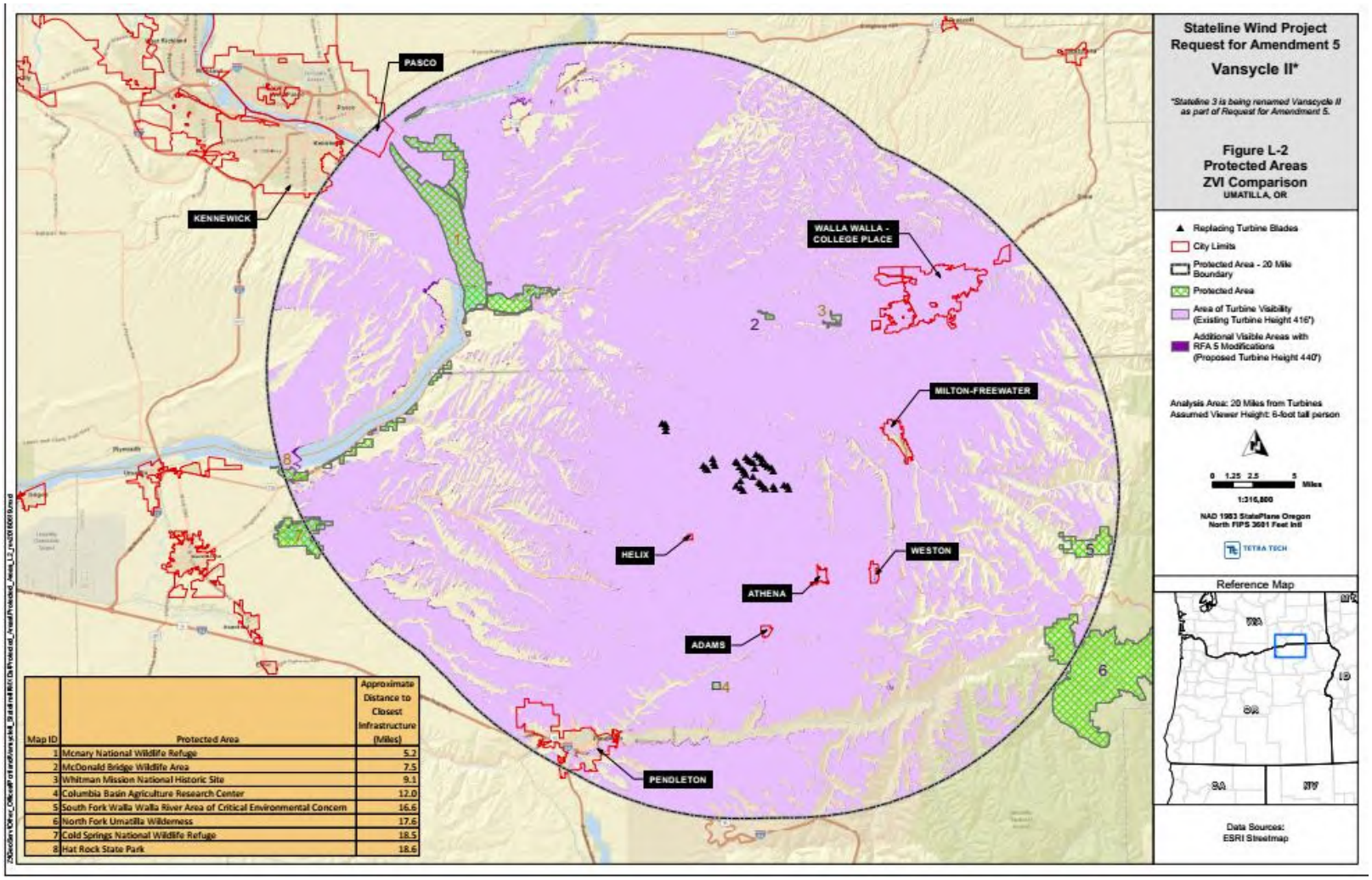
The proposed RFA5 facility modifications would utilize water during construction for dust suppression and road compaction, to be obtained by a third-party contractor from the City of Helix. The proposed RFA5 facility modifications would not utilize water during operations, except for the use of water at the existing Operations and Maintenance building, which was previously evaluated. Construction and operation of the proposed RFA5 facility modifications would not result in wastewater disposal. Therefore, the Council finds that the proposed RFA5 facility modifications would continue not to be likely to result in significant adverse impacts from water use and wastewater disposal within any protected area.

Potential Visual Impacts of Facility Structures

The proposed wind turbine repowering would increase the maximum blade tip height from 416 to 440 feet. To support its evaluation of potential visual impacts of the proposed repowered wind turbines at protected areas, the certificate holder completed a comparative "zone of visual influence" (ZVI) analysis, presenting the incremental increase in visibility of the existing 416-foot wind turbines compared to 440-foot wind turbines. As described in RFA5, the ZVI analysis addresses potential wind turbine visibility based on topography and does not take into account screening from vegetation or structures.

The certificate holder's revised ZVI analysis represents minor increases in visibility along the edges of Hat Rock State Park, as presented in Figure 2, *Zone of Visual Influence Comparative Analysis*, which is more than 18 miles from the site boundary. Based on the distance and minimal amount of potential visibility, the Council finds that the visual impacts of the proposed RFA5 facility modifications would not result in a significant adverse impact to this protected area.

1 **Figure 2: Zone of Visual Influence Comparative Analysis**



Map ID	Protected Area	Approximate Distance to Closest Infrastructure (Miles)
1	Mcnary National Wildlife Refuge	5.2
2	McDonald Bridge Wildlife Area	7.5
3	Whitman Mission National Historic Site	9.1
4	Columbia Basin Agriculture Research Center	12.0
5	South Fork Walla Walla River Area of Critical Environmental Concern	16.6
6	North Fork Umatilla Wilderness	17.6
7	Cold Springs National Wildlife Refuge	18.5
8	Hat Rock State Park	18.6

Conclusions of Law

Based on the foregoing findings, the Council concludes that the design, construction and operation of the proposed RFA5 facility modifications would not be likely to result in significant adverse impacts to any protected areas, in compliance with the Council's Protected Area standard.

III.G. Retirement and Financial Assurance: OAR 345-022-0050

To issue a site certificate, the Council must find that:

> *(1) The site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the facility.*
>
> *(2) The applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition.*

Findings of Fact

The Retirement and Financial Assurance standard requires a finding that the facility site can be restored to a useful, non-hazardous condition at the end of the facility's useful life, should either the certificate holder stop construction or should the facility cease to operate. In addition, it requires a demonstration that the certificate holder can obtain 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.

Restoration of the Site Following Cessation of Construction or Operation

OAR 345-022-0050(1) requires the Council to find that the site of a facility can be restored to a useful nonhazardous condition at the end of the facility's useful life.

The proposed RFA5 facility modifications would not result in changes to the tasks and actions previously identified as necessary to restore the site to a useful, non-hazardous condition. Based on review of the record for the facility, restoring the site to a useful, nonhazardous condition upon cessation of construction or operations (or upon retirement) would involve dismantling all aboveground structures. Nacelles and rotors would be removed from the turbine towers, and the towers would be dismantled. Pad-mounted transformers and related aboveground equipment would be removed. Concrete tower foundations and transformer pads would be removed to a minimum depth of three feet below grade. Gravel or crushed rock would be removed from adjacent turbine pad areas. The O&M building would be removed (or, at the request of the landowner, the building might be converted to farm use). The 230-kV

transmission lines and support structures would be removed. Underground transmission lines and SCADA communication cables that are at least three feet below grade would be left in place. At a depth of three feet, underground components and foundations are not expected to interfere with farming practices.

Council previously imposed conditions obligating the certificate holder to prevent the development of conditions on the site that would preclude restoration. Based upon compliance with existing conditions, the Council finds that the site of the facility, with proposed changes, could be adequately restored to a useful, non-hazardous condition following permanent cessation of construction or operation.

Estimated Cost of Site Restoration

OAR 345-022-0050(2) requires the Council to find that the certificate holder continues to have a reasonable likelihood of obtaining a bond or letter of credit in a form and *amount* necessary to restore the site of the facility, with proposed changes, to a useful non-hazardous condition [Emphasis added].

In RFA5, the certificate holder requests approval to repower 43 existing wind turbines and construct temporary access roads and laydown areas. In RFA5 Exhibit W, the certificate holder provides an updated retirement cost estimate summary of approximately $4.9 million (Q3 2018 dollars). The updated retirement cost estimate relies on methods and unit costs previously approved by Council, and is not based on changes in tasks or action necessary to decommission the repowered wind turbines. The updated retirement cost estimate represents an update to the retirement cost estimate since the Council's 2009 Final Order on Amendment 4 to 2018, adjusted to current dollars using Oregon's Economic Forecast Information. The Council continues to find that the methods and unit rates, adjusted to current dollars, used to develop the updated retirement cost estimate is a reasonable approach to estimate an amount satisfactory to restore the facility site to a useful, non-hazardous condition.

Ability of the Applicant (Certificate Holder) to Obtain a Bond or Letter of Credit

OAR 345-022-0050(2) requires the Council to find that the applicant (certificate holder) has a reasonable likelihood of obtaining a bond or letter of credit in a *form* and amount necessary to restore the proposed facility site to a useful non-hazardous condition [Emphasis added]. A bond or letter of credit provides a site restoration remedy to protect the state of Oregon and its citizens if the certificate holder fails to perform its obligation to restore the site. The bond or letter of credit must remain in force until the certificate holder has fully restored the site. OAR 345-025-0010(8) establishes a mandatory condition to ensure compliance with this requirement, which is imposed through existing Condition 109, which would continue to apply.

Prior to Stateline 3 construction, in accordance with Condition 107, the certificate holder obtained and provided to the Department a bond for $4.0 million. The Council relies on the fact

that the certificate holder currently maintains an active bond, in the amount of $4.4 million with the Department for the existing Stateline Wind Project, to find that the certificate holder has demonstrated the ability to obtain a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, nonhazardous condition.

Conclusions of Law

Based on the foregoing findings of fact, and subject to compliance with the existing conditions, the Council finds that the certificate holder would continue to satisfy the requirements of the Council's Retirement and Financial Assurance standard.

III.H. 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 creates 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.

The analysis area for the Fish and Wildlife Habitat standard includes the area within and extending ½-mile from the site boundary.

Habitat Types and Categories in the Analysis Area

To identify potential habitat category and types within the analysis area, the certificate holder conducted both field and desktop surveys. Field surveys were conducted on April 18 and May 15, 2018 in accordance with a Washington ground squirrel (WGS) survey protocol, and in 2002 and 2008 prior to construction of Stateline 3. To evaluate habitat within the ½-mile analysis area, the certificate holder conducted a desktop review of the 2018 updated Oregon Biodiversity Information Center and biological data from Stateline 3 pre-construction surveys

and annual monitoring reports, provided as RFA5 Exhibit P Attachments P-1 and P-2. Through the desktop review, land use changes within the analysis area since the previous evaluation were identified including expansion of a gravel quarry, conversion of land mapped as Conservation Reserve Program (CRP) to cultivated cropland, and the permanent footprint of the facility.

Habitat category and subtypes identified within the analysis area include the following:

- Category 1
  - CRP or revegetated
  - Grassland
- Category 2
  - Grassland
  - Riparian or riparian trees
- Category 3
  - CRP or revegetated
  - Grassland
  - Grassland – shrub steppe
- Category 4
  - Grassland
- Category 5
  - Grassland
  - Shrub steppe
- Category 6
  - Dry agriculture
  - Developed

Potential Impacts to Habitat

Construction and operation of the proposed RFA5 facility components would result in temporary habitat impacts to Category 3 and 4 (Grassland); and Category 6 (dry agriculture and developed areas). Impacts to Category 6 habitat do not require compensatory mitigation under the Council's Fish and Wildlife Habitat standard.

As presented in Table 3, *Estimated Temporary and Permanent Habitat Impacts, by Category, for Proposed RF5 Facility Modifications*, the proposed facility modifications would temporarily disturb approximately 1.8 and 0.2 acres of Category 3 and 4 habitat, respectively. The proposed RFA5 facility modifications would not result in permanent disturbance due to the fact that the modifications apply to existing structures and would only result in temporary disturbance during construction.

Table 3: Estimated Temporary and Permanent Habitat Impacts, by Category, for Proposed RFA5 Facility Components

Habitat Category	Temporary Impacts[1]	Permanent Impact[2]	Mitigation Requirement
	Acres		
Proposed RFA5 Facility Modifications			
Category 3	1.8	0	Revegetation
Category 4	0.2	0	Revegetation
Category 6	143.9	0	Weed Control
Total Area =	**145.9**	**0**	

Habitat Mitigation

The certificate holder proposes to mitigate temporary habitat impacts through revegetation and noxious weed control, in accordance with the Revegetation Plan, as provided in Attachment E of this order. Based on ODFW policy, because there is not a temporal loss associated with temporary impacts to grassland habitats, compensatory mitigation is not required for impacts to grasslands, if appropriately revegetated.[16] Based on compliance with the Revegetation Plan, and comments received from ODFW on the draft proposed order, the Council finds that the certificate holder would meet the habitat mitigation goals for temporary Category 3 and 4 habitat impacts.[17]

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.[18] Presence was expected or identified as having a potential to occur for the following additional State-sensitive species: 4 birds and 4 bats.

[16] Temporal loss refers to loss of habitat function and values from the time an impact occurs to the time when the restored habitat provides a pre-impact level of habitat function. Habitat subtypes identified within the site boundary, based on pre-construction estimates, including Shrub-steppe is reasonably expected to require a longer restoration timeframe (5+ years) and therefore would be expected to result in temporal loss requiring compensatory mitigation beyond the certificate holder's revegetation obligation.

[17] SWPAMD5. DPO Comments Reviewing Agency ODFW. 2019-04-29. In a comment on the draft proposed order, ODFW confirms that the certificate holder's compliance demonstration with the Fish and Wildlife Habitat standard is acceptable.

[18] Confirmed presence of State-Sensitive species within the analysis area include: Hoary bat, Burrowing owl, Grasshopper sparrow, and Long-billed curlew.

Potential Impacts to State Sensitive Species

Potential impacts to State Sensitive species from the proposed RFA5 facility modification is limited to temporary habitat disturbance, as the facility is operational and would continue to operate for approximately 30 years following repowering. Temporary habitat disturbance would occur from vegetation crushing through use of heavy equipment. Temporary species displacement into adjacent habitat could result from species leaving areas of use due to increased noise and visual disturbances associated with construction activities. Collision with or crushing by heavy equipment could result in direct fatality. However, based on the extent of temporary impacts to habitat (i.e. less than 2 acres), the potential impacts to State Sensitive species is expected to be relatively low.

The certificate holder addresses potential impacts related to fatality risk to bird and bat species from the increase in maximum blade tip height and rotor swept area and argues that the increased blade length would be unlikely to result in detectable changes in avian fatality rates per turbine. However, the certificate holder commits to conducting 1-year of post construction fatality monitoring, in accordance with the Wildlife Monitoring and Mitigation Plan, as provided in Attachment G of this order.

Council previously imposed Conditions 53 and 54 which would require pre-construction raptor nest, burrowing owl, and Special-status species surveys. These conditions would apply to the proposed RFA5 facility modifications and would minimize potential impacts to State-Sensitive species.

Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with existing site certificate conditions, the Council finds that the certificate holder would continue to comply with the Council's Fish and Wildlife Habitat standard.

III.I. 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.

Findings of Fact

The Threatened and Endangered Species standard requires the Council to find that the design, construction, and operation of the facility, with proposed changes, are not likely to cause a significant reduction in the likelihood of survival or recovery of a fish, wildlife, or plant species listed as threatened or endangered by ODFW or Oregon Department of Agriculture (ODA). For threatened and endangered plant species, the Council must also find that the facility, with proposed changes, is consistent with an adopted protection and conservation program from ODA. Threatened and endangered species are those listed under ORS 564.105(2) for plant species and ORS 496.172(2) for fish and wildlife species. For the purposes of this standard, threatened and endangered species are those identified as such by either the ODA or the Oregon Fish and Wildlife Commission.[19]

The analysis area for threatened or endangered plant and wildlife species is the area within and extending five miles from the site boundary.

Potential Impacts to Identified Threatened and Endangered Species

In order to identify threatened and endangered (T&E) species that might occur within the analysis area, the certificate holder reviewed Oregon Department of Fish and Wildlife (ODFW) threatened and endangered species list (ODFW 2017) and ODA-listed plants by county for Umatilla County (ODA 2018) as well as field surveys. The certificate holder determined that the only threatened and endangered species (T&E) with Oregon Biodiversity Information Center (ORBIC) occurrences within the analysis area is Washington Ground Squirrel (WAGS).

Following consultation with ODFW on March 23, 2018, the certificate holder's contractor - Tetra Tech - conducted protocol-level WAGS surveys in the spring of 2018 using methods approved by ODFW. The 2018 survey area includes all potential habitat (non-agriculture and non-developed habitat) within 1,000 feet of disturbance areas associated with repowering that are within potential habitat. The survey results show that there are no active WAGS colonies, signs, or potential burrows within the proposed area of disturbance. Therefore, Council finds

[19] Although the Council's Threatened and Endangered Species standard does not address federally-listed threatened or endangered species, a certificate holder must comply with all applicable federal laws, including laws protecting those species, independent of the site certificate.

that the proposed amendment would not bring any adverse impact to WAGS, and would not be likely to cause a significant reduction in the likelihood or survival of any species listed as threatened or endangered.

There are two T&E plant species previously identified with the potential to occur in Umatilla County - northern wormwood and Lawrence's milkvetch. However, the rare plant survey performed in 2008 in support of Amendment #4 did not observe the presence of any of the species. In addition, as explained by the certificate holder, the two identified species have no ORBIC occurrences in the analysis area. Northern wormwood is believed to be extirpated in Oregon and currently known from only two locations in Grant and Klickitat counties in Washington State. Lawrence's milkvetch known occurrences in Umatilla County are west of the City of Pendleton.

Conclusions of Law

Based on the foregoing findings of fact and conclusions, the Council finds that proposed RFA5 facility modifications would comply with the Council's Threatened and Endangered Species standard.

III.J. 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.*

Findings of Fact

The Scenic Resources standard requires the Council to find that the facility, or facility with proposed changes, would not cause a significant adverse impact to identified scenic resources and values. To be considered under the standard, scenic resources and values must be identified as significant or important in local land use plans, tribal land management plans, and/or federal land management plans.

The analysis area for scenic resources includes the area within and extending 10 miles from the site boundary. There are no lands administered by tribal governments within the analysis area.

Applicable Land Use Plans

In RFA5, the certificate holder describes that the comprehensive plans for the cities of Helix, Athena, and Weston were reviewed and did not identify any specific scenic resources as

significant or important. However, the certificate holder provides a discussion of changes in visibility to these cities from the increase in maximum blade tip height from the proposed wind turbine repowering, which may reviewed in RFA5 Exhibit R.

Because no scenic resources were identified as significant or important within a land use management plan, the Council finds that the proposed RFA5 facility modifications would not impact scenic resources.

Conclusion of Law

Based on the foregoing findings of fact and conclusions of law, the Council finds that the proposed RFA5 facility modifications would continue to comply with the Council's Scenic Resources standard.

III.K. 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.
*****

Findings of Fact

Subsection (1) of the Historic, Cultural and Archaeological Resources standard, OAR 345-022-0090, requires the Council to find that the facility is not likely to result in significant adverse impacts to identified historic, cultural, or archaeological resources. Pursuant to OAR 345-022-0090(2), the Council may issue a site certificate for a facility that would produce power from wind energy without making findings regarding the Historic, Cultural and Archeological standard; however, the Council may impose site certificate conditions based upon the requirements of the standard.

The analysis area for the evaluation of potential impacts to identified historic, cultural or archeological resources, as defined in the project order, is the area within the site boundary.

Description of Discovery Measures

The certificate holder conducted a desktop survey, and relies upon the 2009 tribal monitoring conducted by the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Professional Archeologists within the site boundary during Stateline 3 construction, to inform the impact assessment under the Council's Historic, Cultural and Archaeological Resources standard. The desktop survey utilized the Oregon State Historic Preservation Office's (SHPO) databases of cultural resources (Oregon Archeological Records Remote Access and Historic Sites databases) for the analysis area.[20]

Based on the discovery measures, the certificate holder identifies that there are small areas within the proposed temporary access road and laydown areas that would be located outside of areas previously surveyed. However, the certificate holder affirms that these areas were disturbed during 2009 construction, where a tribal monitor was onsite and resources were not identified. Based on a request for review, in an August 16, 2018 comment letter provided in Attachment B of this order, SHPO Assistant State Archeologist recommended a survey be conducted, by qualified professionals, of the unsurveyed areas. Based on SHPO's comments, the certificate holder provided an additional description of the activities associated with temporary access road and laydown area site preparation, and a discussion of the extent of previous disturbance and monitoring activities completed in 2009. Based on this information, as included in RFA5 Exhibit S, the Council considers SHPO's recommendation that the certificate holder conduct surveys of the small unsurveyed areas prior to construction of the temporary access road and laydown areas unnecessary for informing the impact assessment under the Council's standard, particularly because these areas are active agriculture, were previously disturbed by agricultural activities, and were monitored during previous disturbance by a cultural monitor..[21]

Results of Discovery Measures – Historic and Cultural Resources; Archeological Sites

The desktop survey identified one archaeological resource within the analysis area, a historic railroad grade of the Oregon and Washington Territory Railroad. This resource was previously known and monitored during 2009 construction activities. The certificate holder affirms that there were no cultural resources identified during the 2009 tribal monitoring. The certificate holder also explains that there are no historic properties located within the analysis area.

[20] SWPAMD5. DPO Comment Tribal Government CTWS. 2019-04-08. In a comment on the draft proposed order, CTWS defers comments to CTUIR.

[21] SWPAMD5. DPO Comment Tribal Government CTUIR. 2019-04-29. In a comment on the draft proposed order, CTUIR expressed that because potential areas of disturbance had not been previously surveyed or monitored, cultural monitoring during ground disturbance was recommended. Because the basis of the comment relies in part on an assumption that the unsurveyed areas had not been previously monitored, which is inaccurate, the Council interprets the recommendation to be unnecessary to ensure compliance with the standard.

National Registry of Historic Places – Eligibility Status

Archeological Site

As explained in RFA5 Exhibit S, the one identified archeological resource (35UM 000343) is unevaluated for National Register of Historic Preservation (NRHP)-eligibility, but is a decommissioned historic railroad grade, with portions incorporated into existing agricultural fields and area roads, and is currently a graded road. Because the archeological site is unevaluated for NRHP eligibility, the Council assumes it is likely NRHP eligible.

Potential Impacts to Archeological Site

Potential impacts to the one identified archeological resource (35UM 000343) within the analysis area include direct impacts. Direct impacts to the resource would include temporary disturbance associated with temporary road and laydown area construction. This resource and similar impacts from Stateline 3 construction have been previously evaluated by Council, where impacts associated with temporary construction were determined to be less than significant because the impacts were consistent with the current use of the resource at the time, a graded road. Based on a request for review, in an August 16, 2018 comment letter provided in Attachment B of this order, SHPO Assistant State Archeologist confirmed that the impacts associated with RFA5 would not result in adverse impacts to this archeological resource.

The certificate holder commits to ensuring construction workers and personnel receive a cultural awareness training and, during construction, implementing and adhering to an unanticipated discovery protocol. The Council imposes the following condition, which incorporates applicable requirements previously imposed in Condition 75 and 76, omitting the requirement for cultural monitoring during ground disturbing activities, specific to the proposed RFA5 facility components, as follows:

Condition 143: During construction of Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Ensure all construction personnel receive environmental awareness training from a qualified professional on cultural resources and the inadvertent discovery protocols of the Inadvertent Discovery Plan.

(b) Implement and adhere to Inadvertent Discovery Plan measures previously approved in Condition 75, in the event previously unidentified cultural resources are encountered, as referenced in (i) – (iv) of this condition.

(i) The Inadvertent Discovery Plan establishes that earth-disturbing activities be halted in the immediate vicinity of the find, in accordance with Oregon state law (ORS 97.745 and 358.920).

(ii) Within 24-hours of the find, the certificate holder shall notify the Department, SHPO and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

(iii) The certificate holder shall have a qualified archaeologist evaluate the discovery

and recommend subsequent courses of action in consultation with the CTUIR and the SHPO.

(iv) If human remains are discovered, the certificate holder shall halt all construction activities in the immediate area and shall notify the Department, SHPO, CTUIR, the County Medical Examiner and the State Police.

[RFA5]

Conclusions of Law

Based on the foregoing analysis, and in compliance with OAR 345-022-0110(2), the Council imposes a site certificate condition to address the Historic, Cultural and Archaeological Resources standard.

III.L. Recreation: OAR 345-022-0100

(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of a facility, taking into account mitigation, are not likely to result in a significant adverse impact to important recreational opportunities in the analysis area as described in the project order. The Council shall consider the following factors in judging the importance of a recreational opportunity:

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

Findings of Fact

The Recreation standard requires the Council to find that the design, construction, and operation of a facility would not likely result in significant adverse impacts to "important" recreational opportunities. Therefore, the Council's Recreation standard applies only to those recreation areas that the Council finds to be "important," utilizing the factors listed in the sub-paragraphs of section (1) of the standard. The importance of recreational opportunities is assessed based on five factors outlined in the standard: special designation or management, degree of demand, outstanding or unusual qualities, availability or rareness, and irreplaceability or irretrievability of the recreational opportunity.

In accordance with OAR 345-001-0010(59)(d) and consistent with the study area boundary, the analysis area for recreational opportunities is the area within and extending 5 miles from the site boundary.

Recreational Opportunities within the Analysis Area

The certificate holder conducted a literature review of the following online sources to confirm the presence of recreational opportunities within the 5-mile analysis area:

- United States Bureau of Land Management's 2018 Recreation Web Map
- Oregon Department of Fish and Wildlife's listed wildlife areas
- Oregon Parks and Recreation – Find a Park website
- Oregon Biodiversity Information Center – Oregon's Natural Areas geodatabase
- Umatilla County's 2017 Comprehensive Plan
- Walla Walla County's 2009 Comprehensive Plan

Based on review of the resources referenced above, the certificate holder confirms that there are no recreational opportunities within the analysis area.

Conclusions of Law

Because there are no recreational opportunities within the analysis area, the Council finds that the proposed RFA5 facility modifications would continue to comply with the Council's Recreation standard.

III.M. Public Services: OAR 345-022-0110

> *(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impact to the ability of public and private providers within the analysis area described in the project order to provide: sewers and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.*
>
> *(2) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.*
> *****

Findings of Fact

The Council's Public Services standard requires the Council to find that the facility, with proposed changes, is not likely to result in significant adverse impacts on the ability of public and private service providers to supply sewer and sewage treatment, water, stormwater drainage, solid waste management, housing, traffic safety, police and fire protection, health care, and schools. Pursuant to OAR 345-022-0110(2), the Council may issue a site certificate for a facility that would produce power from wind energy without making findings regarding the

Public Services standard; however, the Council may impose site certificate conditions based upon the requirements of the standard.

The analysis area for potential impacts to public services from construction and operation of the facility, with proposed changes, is defined as the area within and extending 10-miles from the site boundary.

The assumptions relied upon for the impact assessment under the Council's Public Services standard include a construction duration of 3 to 4 months and an estimated maximum of 150 workers. The certificate holder conservatively assumes that 33 percent of workers are local, with the remainder of workers representing non-local workers; but, it is clarified that the certificate holder intends to hire and train local workers to the greatest degree possible.

Sewer and Sewage Treatment; Stormwater Drainage

The proposed RFA5 facility modifications would not require use of public or private sewers or sewage treatment, nor require use of public or private stormwater drainage facilities. Therefore, construction and operation would not impact public and private providers of sewer, sewage treatment or stormwater drainage.

Water

Construction of the proposed RFA5 facility modifications would result in approximately 3.5 million gallons of water for dust suppression and road compaction. Water used for construction would be procured by a third-party from the City of Helix. The certificate holder provided a water right for the City of Helix, in RFA5 Exhibit O Attachment 2, to demonstrate that the city maintains adequate supply and capacity to meet the water use needs during construction. Based on the minimal increase in construction-related water use, the Council finds that construction of the proposed RFA5 facility modifications would continue not to be likely to result in significant adverse impacts on the ability of public or private providers of water to deliver services.

The proposed RFA5 facility modifications would not result in changes to operational water use, which is limited to facility-specific wells that do not result in impacts on the ability of public or private providers of water to deliver services.

Solid Waste Management

Construction and Operation

Construction of the proposed RFA5 facility modifications would generate solid waste. Construction related solid waste would include non-hazardous packaging associated with equipment, removed wind turbine blades, and erosion control materials (i.e. straw bales and

silt fencing). As described in Section III.N., *Waste Minimization* of this order, Council imposes Condition 142 to implement waste minimization measures (i.e. recycling) related to removed wind turbine components for the 43 wind turbines to be repowered. Based on the confirmed adequate capacity at Finley Buttes Regional Landfill, and compliance with the condition, Council finds that construction of the proposed RFA5 facility components would not be likely to result in a significant adverse impact on the ability of public and private providers of solid waste management to deliver services.

Operation of the proposed RFA5 facility modifications would not result in changes to solid waste generation. Council previously imposed Condition 86 requiring that, during operations, generated solid wastes be recycled to the extent practicable and, if disposed at a landfill, transported and disposed by a licensed waste hauler to a licensed disposal facility.

Traffic Safety

Construction and Operation

Construction of the proposed RFA5 facility modifications would result in increased trip generation on local and state roads. The expected transport routes during repowering would follow I-84 and SR 11. Based on review of existing traffic volumes on state roads, construction related traffic impacts is not expected to impact the state highway system. Similarly, existing county roadways would experience an increase in traffic volumes during repowering, but roadway function is anticipated to remain acceptable. Because of the rural nature of the area, the roadways planned for use currently support a small number of trips and have ample capacity.

During construction, trucks used to transport wind turbine blades and other heavy construction equipment would require permits from Oregon Department of Transportation (ODOT) and Umatilla County Road Department. In addition to obtaining necessary haul and heavy load permits, the certificate holder commits to consultation with ODOT and Umatilla County prior to transport of new wind turbine blades and gearboxes to determine if any segments of roadway or bridges are restricted for travel.

The certificate holder proposes traffic management measures to minimize potential construction-related traffic impacts, which Council imposes as a condition as follows:

> **Condition 144:** During construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:
> (a) Provide notice to adjacent landowners when repowering takes place to help minimize access disruptions;
> (b) Provide proper road signs and warnings, including “Oversized Load,” “Truck Access,” or “Road Crossings;”
> (c) Implement traffic diversion equipment, such as advance signs and pilot cars

whenever possible when slow or oversized loads are being hauled;
(d) Encourage carpooling for the workforce to reduce traffic volume;
(e) Employ flag persons as necessary to direct traffic when large equipment is exiting or entering public roads to minimize risk of accidents; and
(f) Maintain at least one travel lane so that roadways will not be closed to traffic because of vehicles entering or exiting public roads.
[AMD5]

Based on compliance with the condition, and because proposed construction routes have adequate capacity for the forecasted maximum trip generation, Council finds that construction related traffic impacts (i.e. vehicle trip generation) from the proposed RFA5 facility modifications would not be likely to result in a significant adverse impact to the ability of public or private providers of traffic safety

The proposed RFA5 facility modifications would not result in changes to operational traffic and therefore would not be likely to result in a significant adverse impact to the ability of public or private providers of traffic safety.

Housing, Police, Fire, Schools, and Healthcare

Construction of the proposed RFA5 facility modifications would result in a temporary increase in population due to an influx of construction workers. The certificate holder's estimate that 66 percent of the workers may be temporary new residents would be less than the 250 temporary new residents evaluated by Council in the Final Order on Amendment 4. The Council previously concluded that the impact to the ability of communities to provide housing, police and fire protection, health care and schools was not likely to be significant. Operation of the proposed RFA5 facility modifications would not result in permanent population increases.

Conclusions of Law

Based on the foregoing analysis, and in compliance with OAR 345-022-0110(2), Council relies on existing and new site certificate conditions to address the Public Services standard.

III.N. Waste Minimization: OAR 345-022-0120

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

(a) The applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;

(b) The applicant's plans to manage the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.

(2) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

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Findings of Fact

The Waste Minimization standard requires the Council to find that the certificate holder will minimize the generation of solid waste and wastewater, and that the waste generated would be managed to minimally impact surrounding and adjacent areas. Pursuant to OAR 345-022-0020(2), the Council may issue a site certificate for a wind facility without making findings regarding the Waste Minimization standard; however, the Council may impose site certificate conditions based upon the requirements of the standard.

Solid Waste and Wastewater

Construction

Construction of the proposed RFA5 facility modifications would generate solid waste, but is not expected to generate wastewater. Non-hazardous, inert wastes types generating during construction would include packaging associated with equipment, removed wind turbine blades, and erosion control materials (i.e. straw bales and silt fencing). In RFA5 Exhibit V, the certificate holder describes that removed turbine blades would be reused or sold for scrap, or otherwise lawfully disposed of, as determined by the manufacturer (Siemens) who is under agreement to remove all old wind turbine components. The certificate holder describe that waste generated during construction would be recycled to the extent practicable, but confirms that Finley Buttes Landfill has adequate capacity to accept waste quantities anticipated during construction.

To ensure the certificate holder minimizes waste generation consistent with Council's standard, Council imposes the following condition:

> **Condition 145:** During construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall ensure its third-party contractors reuse or recycle wind turbine blades, hubs and other removed wind turbine components to the extent practicable. The certificate holder shall report in its semi-annual report to the Department the quantities of removed wind turbine components recycled, reused, sold for scrap, and disposed of in a landfill. [AMD5]

Based on the low level of construction-related waste anticipated during proposed RFA5 facility modifications, and compliance with the above-referenced condition, the Council finds that the certificate holder would continue to minimize and manage solid waste and waste water, resulting in minimal adverse impacts on surrounding and adjacent areas from construction.

Operations

Operation of the proposed RFA5 facility modifications would not result in increased solid waste as evaluated in the *Final Order on Amendment 4.* Operation of the proposed RFA5 facility modifications would not generate wastewater. Council previously imposed Conditions 32, 71, 72, 73, 74, 83 and 86 requiring that, during operation, the certificate holder implement a waste management plan; that the certificate holder train employees to minimize and recycle solid waste; segregate hazardous and non-hazardous waste; and utilize a licensed waste hauler for offsite removal and transport to a licensed waste management facility. The Council finds that compliance with previously imposed conditions would minimize potential operational solid waste and potential impacts from solid waste on surrounding lands.

Conclusions of Law

Based on the foregoing analysis, and subject to existing conditions, the Council finds that that the proposed RFA5 facility modifications would continue to comply with the Council's Waste Minimization standard.

III.O. 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.P. Division 24 Standards

The Council's Division 24 standards include specific standards for the siting of energy facilities, including wind projects, underground gas storage reservoirs, transmission lines, and facilities that emit carbon dioxide.

III.P.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 Public Health and Safety Impacts from Proximity to Turbine Blades

The proposed RFA5 facility modifications would increase maximum blade tip height of up to 43 existing wind turbines from 416 to 440 feet, and would lower the minimum above-ground blade-tip clearance from 111 to 85 feet. These proposed changes in wind turbine dimension could result in potential public health and safety impacts from increased proximity to turbine blades. However, the certificate holder describes that the access gates to the proposed repowered wind turbines would be locked, located entirely on private property, and that access roads to wind turbines would be gated or locked when not in use. Council previously imposed Conditions 35 and 38, which include various safety measures and access restrictions. The Council considers that the facility design, including restricted access from locked gates, would be sufficient to minimize potential increases in public health and safety risks from proximity to the proposed larger wind turbine blades with lower minimum aboveground blade tip clearance.

In RFA5 Exhibit E, the certificate holder identifies that Notice of Proposed Construction or Alteration (7460-1) forms identifying changes in maximum blade tip height and requesting a Determination of No Hazard, as required under Federal Aviation Administration (FAA) regulations, are required. The Council relies on this process and FAA hazard determination to minimize potential hazards to navigable airspace. To ensure this process is completed prior to construction, the Council imposes the following condition:

> **Condition 146:** Prior to construction of Vansycle II wind turbine repower, as approved in the Fifth Amended Site Certificate, 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 change in maximum blade tip height of the wind turbines to be repowered. Determination of No Hazards or other comments from FAA or Oregon Department of Aviation shall be provided to the Department. [AMD5]

The Council finds that compliance with the existing and new conditions would continue to satisfy the requirements of the standard and ensure that the proposed RFA5 facility modifications are designed, constructed, and operated to exclude members of the public from close proximity to the turbine blades.

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

The proposed changes in wind turbine dimensions could result in public health and safety risks from any potential increases in blade failure risks. The Council 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 36 requires that the certificate holder notify the Department of any accidents or mechanical failures associated with operation of the facility that may result in public health and safety concerns.
- Condition 95 requires that the certificate holder conduct routine inspections of turbine blades for signs of wear or potential failure.
- New Conditions 139 and 140 require that the certificate holder conduct routine inspections of the reinforced bar of the wind turbine foundations and of the anchor bolts.

As described above, OAR 345-024-0010(2) requires the Council to find that the certificate holder can design, construct and operate the facility to preclude structural failure of the tower

or blades that could endanger public safety. In other words, 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 Council finds that compliance with the existing and new conditions would continue to satisfy the requirements of the standard and ensure that the proposed RFA5 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 RFA5 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 new conditions, Council finds that the proposed RFA5 facility modifications would comply with the Council's Public Health and Safety Standards for Wind Energy Facilities.

III.P.2. 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.

Findings of Fact

This standard addresses safety hazards associated with electric fields around transmission lines. Section (1) of OAR 345-024-0090 sets a limit for electric fields from transmission lines of not more than 9 kV per meter at one meter above the ground surface in areas that are accessible to the public. Section (2) requires implementation of measures to reduce the risk of induced current.

RFA5 does not propose transmission lines nor propose changes to the existing 230 kV transmission line; therefore, the Council's Siting Standards for Transmission Lines does not apply to the proposed changes included in the amendment request.

Conclusion of Law

For the reasons discussed above, the Council finds that the proposed RFA5 facility modifications would not result in a significant adverse impact under OAR 345-024-0090 and would continue to comply with the Council's Siting Standards for Transmission Lines.

III.P.3. 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 construction activities. No new permanent roads would be constructed as part of RFA5. Existing Condition 60, as described in Section III.D., *Soil Protection* of this order would require that, during construction, the certificate holder implement erosion and sediment control measures outlined in a new NPDES 1200-C permit,

obtained prior to construction of proposed RFA5 facility modifications, and ESCP to reduce adverse environmental impacts from facility roads.

Because the proposed RFA5 facility modifications would not result in new permanent access roads, the Council continues 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

OAR 345-024-0015(2) and (3) encourage wind facilities to utilize underground transmission lines, combine transmission routes and minimize the number of new substations.
RFA5 does not propose new transmission lines or substations, or changes to the previously approved site boundary. Therefore, Council finds that RFA5 would not result in a significant adverse impact under OAR 345-024-0015(2) and (3) that was not addressed in a previous Council order and incorporates reasoning and analysis presented in *Final Order on Amendment 4* by reference.

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 wind turbine repowering would increase the maximum turbine blade tip height from 426 to 440 feet, and increase rotor-swept diameter from 305 to 354 feet. 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.H, *Fish and Wildlife Habitat*, the certificate holder proposes to conduct 1-year of post construction fatality monitoring to determine whether the changes in wind turbine dimensions result in increased fatality risk and then whether additional mitigation is necessary. The post construction fatality monitoring would be implemented in accordance with the Wildlife Monitoring and Mitigation Plan (WMMP), provided as Attachment G to this order.

Based on compliance with other existing site certificate conditions, the certificate holder would implement the following measures to further reduce and avoid wildlife impacts:

- Pre- and post-construction raptor nest monitoring, seasonal timing restrictions and avoidance requirements
- Habitat mitigation, revegetation and monitoring
- Weed control and monitoring

In addition, Council previously imposed Condition 70, which applies to facility design and requires consideration of micrositing factors including selecting final wind turbine locations away from saddles in long ridges and on the top or slightly downwind of distinct ridges and setback from the upwind (or prevailing wind) side, which the certificate holder satisfied. Subject to compliance with existing site certificate conditions, the Council finds that the certificate holder continues to demonstrate that it can reduce cumulative adverse environmental effects in the vicinity by designing the proposed RFA5 facility modifications to reduce the risk of injury to raptors or other vulnerable wildlife in areas near wind turbines or electrical equipment.

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 repowered wind turbines would be similar to those evaluated in the *Final Order on Amendment 4*. Additionally, based on compliance with existing site certificate conditions, the certificate holder would implement the following measures to reduce potential visual impacts from the proposed repowered wind turbines:

- Lighting would be kept to a minimum necessary, and designed to prevent offsite glare
- Temporary impact areas would be restored and revegetated as soon as practicable following completion of construction

Based on the evidence in the record and subject to compliance with existing site certificate conditions, the Council relies on its previous reasoning and continue to find the certificate holder demonstrates that it can reduce cumulative adverse environmental effects in the vicinity by designing the proposed RFA5 facility modifications to minimize adverse visual features.

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 37 requires wind turbines to be equipped with the minimum turbine tower lighting required by FAA. Based on compliance with this condition, the Council finds 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.

Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with existing conditions, the Council finds that the proposed RFA5 facility modifications would comply with the Council's Cumulative Effects Standards for Wind Energy Facilities.

III.Q. Other Applicable Regulatory Requirements Under Council Jurisdiction

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 noise control regulations, regulations for removal or fill of material affecting waters of the state, and regulations for appropriating ground water.

III.Q.1. Noise Control Regulations: OAR 340-035-0035

(1) Standards and Regulations:

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(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.

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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 DEQ noise control regulations establish standards for source located on previously unused and previously used sites. While the Council assumes that because the facility is currently in operation and has been in operation for more than 10 years, the site could be characterized as previously used – and the standards that apply to a previously used site could be used. However, the certificate holder elects to apply the standards for a previously unused site, which are more conservative and therefore are applied to the proposed RFA5 facility modifications.

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 4, *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 4: 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

Potential noise impacts from construction and operation of the proposed RFA5 facility modifications within the analysis area are presented below. The analysis area for the Noise Control Regulation is the area within and extending 1-mile from the site boundary.

Construction

OAR 340-035-0035(5)(g) specifically exempts noise caused by construction activities. In RFA5, the certificate holder describes that construction activities are anticipated to occur over 4 months and would include the following phases: minor site grading and clearing; material delivery; repowering; and site restoration. Estimated sound pressure levels at distances of 50 and 2,000 feet were provided for typical equipment anticipated to be used during construction, ranging from 73 to 88 dBA at 50 feet, for a welder and dozer, respectively; and from 41 to 56 dBA at 2,000 feet for a welder and dozer, respectively. Proposed noise reducing measures include: landowner notification of construction start date and duration; siting of laydown areas as far from noise sensitive receptors as practical; scheduling construction activities to daytime hours; and, using equipment with appropriate size muffler systems, which the Council considers standard practice as equipment is manufactured with mufflers.

Based on RFA5 Exhibit X, there are 51 noise sensitive receptors located within the analysis area, or within 1-mile of the site boundary. Therefore, based on the certificate holder's proposed measures to minimize temporary noise impacts during construction, the Council imposes the following condition:

Condition 147: For the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) During design, select temporary staging areas based on a location with minimal noise impacts and proximity to noise sensitive receptors.

(b) Prior to construction, provide notice to landowners within 1-mile of the site boundary to inform of the construction start date, duration and description of activities and noise levels. The notice shall include the name and phone number of the certificate holder's representative which can be contacted to record construction-related noise complaints.

[AMD5]

Operations

The certificate holder provides noise modeling results of the proposed RFA5 facility modifications, specifically for the 43 repowered wind turbines and included transformer noise from the existing substation. For its analysis, the certificate holder used the as-built locations of the 43 existing wind turbines and the Computer Aided Noise Abatement (CadnaA) software program, version 2018 MR1 to make the predictions of peak noise levels at noise-sensitive receptors within the analysis area. The program includes sound propagation factors adopted from International Organization for Standardization's (ISO) 9613-2 "Attenuation of Sound during Propagation Outdoors" to account for geometric divergence, atmospheric absorption, reflection from surfaces, screening by topography and obstacles, terrain complexity and ground effects, source directivity factors, seasonal foliage effects, and meteorological conditions. Topographical information was imported into the acoustic model using the official U.S. Geological Survey (USGS) digital elevation dataset to accurately represent terrain in three dimensions. Terrain conditions, vegetation type, ground cover, and the density and height of foliage can also influence the absorption that takes place when sound waves travel over land.

Council has historically accepted use of CadnaA as a reliable and reasonable method for estimating wind turbine noise level and for evaluating compliance with DEQ's noise standard.[22] The certificate holder refutes potential concerns on the accuracy of the model and modeling results by explaining conservative assumptions included in the model, which include:[23]

[22] SWPAMD5. DPO Comment Public Severe. 2019-04-15. In a comment on the draft proposed order, Ms. Cindy Severe expressed concerns that because the modeling tool used to evaluate wind turbine noise, CadnaA, does not account for wind shear, predicted noise levels are not in compliance with DEQ's noise standard. As explained in this order, Council finds that based on new and existing conditions, while wind shear may not be accounted for in the modeling, there are conditional requirements designed to ensure compliance with the standards, including a requirement that the certificate holder conduct statistical noise monitoring during operations if necessary for compliance verification.

[23] SWPAMD5. DPO Comment Certificate Holder. 2019-04-26. In a comment on the draft proposed order, the certificate holder provides responses to Ms. Severe's concerns regarding the accuracy and adequacy of the use of CadnaA to evaluate wind turbine noise.

- The ISO 9613-2 standard assumes downwind propagation in all directions; in other words, receptors are assumed to be downwind of all wind turbines regardless of actual wind conditions. It is well understood that sound travels further downwind than upwind; therefore, the ISO 9613-2 standard assumption of downwind propagation in all directions would result in an overestimation of received sound levels at receptors that are not located downwind.
- All wind turbines are operating concurrently at maximum rated power, which is a very unlikely operational condition.
- Meteorological conditions favorable to sound propagation were selected: 10°C and 70% relative humidity.
- A semi-reflective ground absorption coefficient (G=0.5) was used throughout the facility area, with an increasingly more reflective ground absorption coefficient used approaching each turbine location.
- Shielding effects from existing vegetation and anthropogenic structures is ignored.

In RFA5, the certificate holder provides a noise analysis of the 43 proposed repowered wind turbines, with existing collector substation noise sources, based on the following sound power levels:

- Modified Noise Source: 43 repowered SG 2.3-108 wind turbines at 107 dBA, based on wind speeds 10 meters above ground
- Existing Noise Source: 1 substation transformer at 108 dBA

Noise modeling results show that there are 4 noise sensitive receptors that would exceed the 10 dBA threshold above ambient or assumed ambient noise (assumed ambient baseline is 26 dBA, per OAR 340-035-0035(1)(b)(B)(iii)(I)); however, as described in RFA5, these 4 noise sensitive receptors are all "participating property owners," meaning those landowners have signed a lease with the certificate holder and have indicated that they are willing to sign a noise waiver, if necessary.[24] The noise modeling results also show that the proposed RFA5 facility modifications, including existing noise sources, would not exceed the maximum allowable decibel threshold of 50 dBA at any noise sensitive receptor within the analysis area.

The Council imposes the following condition to ensure compliance with the noise control regulation:

Condition 148: Prior to construction of Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall provide to the Department:
(a) Information that identifies the as-built locations of all Vansycle II wind turbines.
(b) The maximum sound power level for the existing Vansycle II substation transformers and the maximum sound power level and octave band data for the repowered

[24] SWPAMD5. Request for Amendment 5 Exhibit X. 2019-01-18.

Vansycle II wind based on manufacturers' warranties or confirmed by other means acceptable to the Department.

(c) The results of noise analysis for the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, 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 (including the noise from repowered wind turbines and existing 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.

[AMD5]

In addition, Council previously imposed Condition 134 requiring that, during operations, the certificate holder maintain a complaint response system to address noise complaints. Condition 134 allows Council to require operational noise monitoring to verify compliance with the DEQ's noise standard, if determined necessary based on receipt of noise-related complaints.

Conclusions of Law

Based on the foregoing findings, the Council finds that the proposed RFA5 facility modifications would comply with the Noise Control Regulations in OAR 340-035-0035(1)(b)(B).

III.Q.2. 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."[25] 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.

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

The analysis area for potential impacts to wetlands and other waters of the state, as defined in the project order, is the area within the site boundary.

Findings of Fact

The proposed RFA5 facility modifications would be located within previously approved site boundary area, on EFU-zoned land utilized for dryland wheat cultivation and cattle grazing. In RFA5, the certificate holder describes that the proposed RFA5 facility modifications would not result in temporary or permanent impacts to waters of the state, and confirms that a removal-fill permit would not be needed.

RFA5 does not request any change to the facility site boundary. Therefore, the Council finds that the proposed RFA5 facility modifications would continue to satisfy the requirements of the removal-fill law and that the certificate holder is not required to obtain a removal-fill permit.

Conclusions of Law

Based on the foregoing findings of fact and conclusions, the Council finds that a removal-fill permit is not needed for the proposed RFA5 facility modifications.

III.Q.3. 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.

Findings of Fact

OAR 690 establishes the procedures and standards which shall be applied by the OWRD in the evaluation of applications for a permit to appropriate surface water, ground water, to construct a reservoir and store water, to use reserved water, or to use water stored in a reservoir.

Construction and operation of the proposed RFA5 facility modifications would not necessitate a groundwater permit, a surface water permit, or a water rights transfer. The certificate holder confirms that construction-related water, as described in RFA5 Exhibit O, would be used for road and earthwork compaction, as well as dust suppression, and would be pumped into tanker trucks and obtained from the City of Helix. The proposed RFA5 facility modifications would not result in changes to operational water use.

Therefore, the Council finds that the proposed RFA5 facility modifications would continue to satisfy the requirements of the Ground Water Act of 1955 or Water Resources Department rules.

Conclusions of Law

Based on the foregoing findings of fact, the Council concludes that the proposed RFA5 facility modifications would not need a groundwater permit, surface water permit, or water right transfer.

IV. GENERAL CONCLUSIONS AND FINAL ORDER

Based on the findings and conclusions included in this order, Council makes the following findings:

1. The facility, with proposed changes, included in Request for Amendment 5 of the Stateline Wind Project site certificate complies with the requirements of the Oregon Energy Facility Siting Statutes, ORS 469.300 to 469.520.

2. The facility, with proposed changes, included in Request for Amendment 5 of the Stateline Wind Project site certificate complies with the standards adopted by the Council pursuant to ORS 469.501.

3. The facility, with proposed changes, included in Request for Amendment 5 of the Stateline Wind Project 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 Council finds that the facility, with proposed changes, included in Request for Amendment 5 of the Stateline Wind Project site certificate complies with the General Standard of Review (OAR 345-022-0000). The Council finds, based on a preponderance of the evidence on the record, that the site certificate may be amended as requested.

Final Order

The Council approves Amendment 5 of the Stateline Wind Project site certificate.

Issued this 17th day of May, 2019

The OREGON DEPARTMENT OF ENERGY

ATTACHMENTS

Attachment A: Amended Site Certificate
Attachment B: Reviewing Agency Comments on preliminary RFA5
Attachment C: Draft Proposed Order Comments and Index
Attachment D: Emergency Action Plan
Attachment E: Revegetation Plan
Attachment F: Habitat Mitigation Plan
Attachment G: Wildlife Monitoring and Mitigation Plan
Attachment H: Draft Erosion Sediment Control Plan

Notice of the Right to Appeal

The right to appeal this order approving an amendment to a site certificate is provided in ORS 469.403. Only those persons, including the certificate holder, who provided written comment on the record of the draft proposed order may seek judicial review as provided by OAR 345-027-0072(5). Issues eligible for judicial review are limited to the issues raised in that person's written comments.

To appeal you must file a petition for judicial review with the Supreme Court within 60 days from the day this order was served on you. If this order was personally delivered to you, the date of service is the date you received this order. If this order was mailed to you, the date of service is the date it was mailed, not the date you received it. If you do not file a petition for judicial review within the 60-day time period, you lose your right to appeal.

Attachment A: Amended Site Certificate

ENERGY FACILITY SITING COUNCIL
OF THE
STATE OF OREGON

Fifth Amended Site Certificate
for the
Stateline Wind Project

May 2019

ISSUANCE DATES

Site Certificate	September 14, 2001
First Amended Site Certificate	May 24, 2002
Second Amended Site Certificate	June 6, 2003
Third Amended Site Certificate	June 20, 2005
Fourth Amended Site Certificate	March 27, 2009
Fifth Amended Site Certificate	May 17, 2019

Oregon Energy Facility Siting Council

FIFTH AMENDED SITE CERTIFICATE FOR THE STATELINE WIND PROJECT

I. INTRODUCTION

The Energy Facility Siting Council ("Council") issues this site certificate for the Stateline Wind Project 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 the certificate holders. The certificate holders are FPL Energy Vansycle LLC ("FPL Vansycle") and FPL Energy Stateline II, Inc. ("FPL Stateline"). This site certificate authorizes the certificate holders to construct and operate the Stateline Wind Project (the "facility") in Umatilla County, Oregon. [Amendment #4]

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 in the Matter of the Application for a Site Certificate for the Stateline Wind Project ("Final Order on the Application"), issued on September 14, 2001, (b) the Council's Final Order in the Matter of the Request for Amendment #1 of the Site Certificate for the Stateline Wind Project ("Final Order on Amendment #1"), (c) the Council's Final Order in the Matter of the Request for Amendment #2 of the Site Certificate for the Stateline Wind Project ("Final Order on Amendment #2"), (d) the Council's Final Order in the Matter of the Request for Amendment #3 of the Site Certificate for the Stateline Wind Project ("Final Order on Amendment #3"), (e) the Council's Final Order in the Matter of the Request for Amendment #4 of the Site Certificate for the Stateline Wind Project ("Final Order on Amendment #4"), and (f) the Council's Final Order in the Matter of the Request for Amendment #5 ("Final Order on Amendment #5). [Amendments #1, #2, 3, #4, #5]

[Text added here by Amendment #3 was deleted by Amendment #4]

In interpreting this site certificate, any ambiguity will be clarified by reference to the following, in order of priority: this Fifth Amended Site Certificate, Final Order on Amendment #5, Fourth Amended Site Certificate, Final Order on Amendment #4, the Final Order on Amendment #3, the 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, #2, #3, #4, and #5. [Amendments #1, #2, #3, #4, and #5]

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 FPL Vansycle to construct, operate and retire Stateline 1&2 and authorizes FPL Stateline to construct, operate and retire Vansycle II as described in Section III of this site certificate. ORS 469.401(1). [Amendment #4; AMD5]

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). [AMD5]

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 Amendments #1, #2, #3, #4 and #5. These 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. ORS 469.503(3). [Amendments #1, #2, #3, #4, and #5]

4. The State and the certificate holders 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). [Amendment #4; AMD5]

5. For a permit, license or other approval addressed in and governed by this site certificate, the certificate holders 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). [Amendment #4; AMD5]

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). [AMD5]

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). [AMD5]

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). [AMD5]

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 assure that the facility is being operated consistently with the terms and conditions of this site certificate. ORS 469.430. [AMD5]

III. DESCRIPTIONS AND DIVIDED RESPONSIBILITY

1. Stateline 1&2

(i) Major Structures

Stateline 1&2 consists of 186 Vestas V47-660-kilowatt (kW) wind turbines, each having a peak generating capacity of 0.66 MW.[1] Each wind turbine is connected to a 34.5-kilovolt (kV) collector system. The wind turbines are grouped in "strings" of turbines, each turbine spaced

[1] The site certificate authorizes up to 187 turbines, but the certificate holder chose to build 186.

approximately 250 feet from the next, generally slightly downwind of the crest of ridges. Major facility structures are further as described in the Final Orders on the Application and Amendments #1 and #2. [Amendments #1, #2 and #4]

(ii) Related or Supporting Facilities

Stateline 1&2 includes the following related or supporting facilities described below and in greater detail in the Final Order on Amendment #4:

- Access roads to reach each turbine for construction and maintenance
- Underground collector cables that transmit the electrical output of the wind turbines to a substation in Washington [Amendment #2]
- [Text added by Amendment #2 was deleted by Amendment #4]
- [Text added by Amendment #2 was deleted by Amendment #4]
- Meteorological towers
- A satellite operations and maintenance building

Access Roads

County roads that extend south from Highway 12 in Washington (e.g., Hatch Grade Road and Butler Grade Road) and north from Oregon Highway 11 (e.g., Vansycle Canyon Road and Butler Grade Road) are the primary routes of access to the facility site. From the county roads, a web of private farm roads provides access to most of the ridges upon which the facility is located. Additional access roads are located along the length of each turbine string and connecting each turbine string to the next. Access roads are further as described in the Final Orders on the Application and Amendments #1 and #2. [Amendments #1 and #2]

Collector System

The wind turbines generate power at 690 volts. A transformer adjacent to each tower transforms the power to 34.5 kV. From the turbines, power is transmitted via an underground 34.5-kV collector system. Overhead transmission lines, located entirely within Washington, connect the Washington substation to a BPA 115-kV transmission line north of the Walla Walla River and to a PacifiCorp substation just north of Highway 12. [Amendments #1, #2 and #4]

Meteorological Towers

Stateline 1&2 includes up to six permanent meteorological (met) towers to measure wind conditions. The met towers are unguyed towers. [Amendments #1, #2 and #4]

Satellite O&M Building

Stateline 1&2 includes an operation and maintenance (O&M) facility, which is a satellite to the primary O&M facility located in Washington. The satellite O&M facility is located along Butler Grade Road south of Gardena and just south of the state line in Oregon. [Amendment #4]

2. Vansycle II[2]

(i) Major Structures

Stateline 3 consists 43 Siemens 2.3-MW wind turbines. Stateline 3 has a combined peak generating capacity of up to 98.9 MW. Major facility structures are further as described in the Final Order on Amendment #4. [Amendment #4; AMD5]

[2] Prior to the Fifth Amended Site Certificate, Vansycle II was referred to as Stateline 3.

Wind Turbine Repower

Wind turbine repowering includes removal and replacement of wind turbine hub (blade and rotor) and gearbox (nacelles). Haul trucks, boom trucks and cranes are used to support repowering activities. A crane is mobilized and new gearboxes, blades and hub are delivered onsite. A boom truck or telehandler is used to unload and assemble new turbine blades and hub into a complete rotor. Gearboxes and assembled hubs are set up on the access road adjacent to the wind turbine. The crane is used to lower rotors and gearbox, which is then be place next to the crane; and, then used to pick up and set the new rotor. Either a boom truck or telehandler is used to disassemble the replaced rotor (blade and hub); materials are then transported offsite for proper disposal at a licensed disposal or recycling facility. [AMD5]

(ii) Related or Supporting Facilities

Stateline 3 includes the following related or supporting facilities described below and in greater detail in the Final Order on Amendment #4:

- Access roads to reach each turbine for construction and maintenance
- Underground collector cables that transmit the electrical output of the wind turbines to a substation
- A substation
- A 230-kV transmission line
- Meteorological towers
- An operations and maintenance building
- Temporary laydown areas and access roads

[Amendment #4; AMD5]

Access Roads

County roads that extend south from Highway 12 in Washington (e.g., Hatch Grade Road and Butler Grade Road) and north from Oregon Highway 11 (e.g., Vansycle Canyon Road and Butler Grade Road) are the primary routes of access to the facility site. From the county roads, a web of private farm roads provides access to most of the ridges upon which the facility is located. Additional access roads are located along the length of each turbine string and connecting each turbine string to the next. [Amendment #4]

Collector System, Substation and Transmission Line

The wind turbines generate power at 690 volts. A transformer adjacent to each tower transforms the power to 34.5 kV. From the turbines, power is transmitted via an underground 34.5-kV collector system to a substation located in Township 5 North, Range 34 East. Approximately 16 miles of aboveground 230-kV transmission line (13 miles in Oregon) connects the Stateline 3 substation to existing major transmission lines in Washington. [Amendment #4]

Meteorological Towers

Stateline 3 includes two permanent meteorological (met) towers. The met towers are unguyed towers. [Amendment #4]

O&M Building

Stateline 3 includes an O&M building near the intersection of Wayland Road and Gerking Flat Road north of Helix. [Amendment #4]

Temporary Laydown Areas and Access Roads

Temporary laydown or staging areas used during construction of facility modifications approved in the Fifth Amended Site Certificate are located at each tower location (approximately 1.4 acres of temporary disturbance at up to 43 wind turbine locations, totaling approximately 60 acres), and an additional 20-acre staging area is used for temporary equipment storage and parking.

Temporary access roads used during construction of facility modifications approved in the Fifth Amended Site Certificate include approximately 15 miles of existing 16-foot access roads, temporarily widened to 33 feet plus an additional 3 feet of should on each side (or 39 feet total and approximately 42 acres total).

Temporary road widening uses the same design specifications (e.g., graded level to the current road profile) as the existing road. Temporary widening of the access roads prior to construction generally consists of clearing vegetation by mowing and minor grading of the road.
[AMD5]

3. Location of the Facility

The facility is located in Umatilla County, north and east of Helix, Oregon. The towns closest to the facility are Helix, Oregon, and Touchet, Washington. The wind turbines would be located on ridges east of the Columbia River and south of the Walla Walla River. The location of the facility is further as described in the Final Orders on the Application and Amendments #1, #2 and #4. [Amendments #1, #2 and #4]

4. Responsibility for Stateline 1&2 and Vansycle II

FPL Vansycle shall be individually responsible for compliance with all conditions relating to Stateline 1&2, and FPL Stateline shall not be jointly responsible for such compliance. FPL Stateline shall be individually responsible for compliance with all conditions relating to Vansycle II and FPL Vansycle shall not be jointly responsible for such compliance. If the Council or the Oregon Department of Energy ("Department") determines that a violation of the Site Certificate or any Council order pertaining to the facility may have occurred, the Council or the Department may direct appropriate inquiries to the responsible entity. If the Council or the Department is unable to determine which entity is responsible, the Council or the Department may direct appropriate inquiries to both entities. [Amendment #4; AMD5]

IV. CONDITIONS REQUIRED BY COUNCIL RULES

This section lists conditions specifically 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 in OAR Chapter 345, Division 26 (Construction and Operation Rules for Facilities). These conditions should be read together with the additional

specific facility conditions 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. [Amendments #1 and #4]

The Council recognizes that many specific tasks related to the design, construction, operation and retirement of the facility will be undertaken by agents or contractors. However, FPL Vansycle is responsible for ensuring compliance with all provisions of the site certificate pertaining to Stateline 1&2, and FPL Stateline is responsible for ensuring compliance with all provisions of the site certificate pertaining to Vansycle II. [Amendment #4].

Citation to the sources of, or basis for, certain conditions are shown in parentheses.[3] Conditions are numbered continuously throughout sections IV through IX of this site certificate. [Amendment #4]

In applying the conditions in this section, "certificate holder" means FPL Vansycle with regard to Stateline 1&2 and FPL Stateline with regard to Vansycle II. [Amendment #4]

1. General Conditions

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

(2) 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.

(OAR 345-027-0020(3))

(3) The certificate holder shall begin and complete construction of the facility by the dates specified in the site certificate. (345-027-0020(4))

See conditions (24), (97) and (106). [Amendment #4]

(4) 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. (345-027-0020(7))

(5) 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. (OAR 345-027-0020(10))

(6) For the related or supporting transmission lines:
(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

[3] References to the site certificate application are to the application as modified by the supplement and later revisions, abbreviated as "App."

(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. (OAR 345-027-0023(6)) [Amendment #4]

(7) 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 section (a) and monitoring programs required by permitting agencies and local governments.

(c) For each monitoring program described in sections (a) and (b), 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.

(OAR 345-027-0028) [Amendment #4]

(8) 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 this rule;

(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 this rule. The Council Secretary and the certificate holder may, by mutual agreement, change the reporting date.

(iii) To the extent that information required by this rule 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 the 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).

(OAR 345-026-0080) [Amendment #4]

(9) [Condition removed by Amendment #4]

(10) 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. (OAR 345-026-0105) [Amendment #4]

2. Conditions That Must Be Met Before Construction Begins

(11) Except as necessary for the initial survey or as otherwise allowed for wind energy facilities, transmission lines or pipelines under OAR 345-027-0020(5), 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 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.

(OAR 345-027-0020(5)) [Amendment #4]

(12) Following receipt of a 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. (OAR 345-026-0048) [Amendment #4]

(13) 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. (OAR 345-027-0020(2)) [Amendment #4]

See Condition (84).

(14) 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. (OAR 345-027-0020(6))

(15) 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. The certificate holder shall maintain the 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. (OAR 345-027-0020(8))

See Conditions (80) and (109).

[Amendment #4]

3. Conditions That Apply During Construction

(16) 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. (OAR 345-027-0020(12))

(17) 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. (OAR 345-027-0020(13)) [Amendment #4]

(18) 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. (OAR 345-027-0020(14)) [Amendment #4]

4. Conditions That Must Be Met Before Operation Begins

(19) 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. (OAR 345-027-0020(9)) [Amendment #4]

(20) Upon completion of construction, the certificate holder shall restore vegetation to the extent practicable and shall landscape portions of the site 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. (OAR 345-027-0020(11)) [Amendment #4]

(21) 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. (OAR 345-027-0023(5)) [Amendment #4]

5. Conditions That Must Be Met During Operation

(22) [Condition removed by Amendment #4]

(23) 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.

(OAR 345-026-0170) [Amendment #4]

V. SPECIFIC FACILITY CONDITIONS

The conditions listed in this section include conditions based on representations in the site certificate application and supporting record. The Council deems these representations to be binding commitments made by the applicant. These conditions are required under OAR 345-027-0020(10). [Amendments #1 and #4]

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.

Citation to the sources of, or basis for, certain conditions are shown in parentheses. [Amendment #4]

Except as specifically noted, these conditions apply to all phases of the Stateline Wind Project. In applying the conditions in this section, "certificate holder" means FPL Vansycle with regard to Stateline 1&2 and FPL Stateline with regard to Vansycle II. [Amendment #4]

1. General Conditions

(24) This condition applies to Stateline 1 only. The certificate holder shall begin construction of Stateline 1 within one year after the effective date of the site certificate. The certificate holder shall complete construction of Stateline 1 on or before two years from the effective date of the site certificate. Under OAR 345-015-0085(9), a site certificate is effective upon execution by the Council Chair and the applicant. Completion of construction occurs upon the date commercial operation of Stateline 1 begins. The Council may grant an extension of the construction beginning or completion deadlines in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted. [Amendment #4]

See condition (3).

(25) Within 72 hours of 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 of Energy. (OAR 345-027-0020(3)) [Amendment #4]

(26) Notwithstanding OAR 345-027-0050(2), an amendment of the site certificate is required if the proposed change would increase the electrical generation capacity of the facility and would increase the number of wind turbines or the dimensions of existing wind turbines. (OAR 345-027-0020(3))

(27) [Condition removed by Amendment #4]

(28) The certificate holder shall report promptly to the Department of Energy any change in its corporate relationship with NextEra Energy Resources LLC. The certificate holder shall report promptly to the Department any change in its access to the resources, expertise and personnel of NextEra Energy Resources LLC. (App A-3, D-2, OAR 345-022-0010) [Amendment #4; AMD5]

(29) The certificate holder shall inspect and maintain all roads, pads and trenched areas to minimize erosion. (App B-11) [AMD5]

(30) The certificate holder shall carry out weed control and reseeding as necessary for the life of the facility, in consultation with the weed control board of Umatilla County. (App B-11) [AMD5]

(31) The certificate holder shall not store fuel or chemicals in Oregon. (App B-12)

(32) The certificate holder shall use hazardous materials in a manner that is protective of human health and the environment and shall comply with all applicable local, state, and federal environmental laws and regulations. The certificate holder shall make sure that accidental releases of hazardous materials will be prevented or minimized through the proper containment of these substances during transportation and use on the site. The certificate holder shall make sure that any oily waste, rags or dirty or hazardous solid waste will be collected in sealable drums and removed for recycling or disposal by a licensed contractor. The certificate holder shall have spill kits containing items such as absorbent pads on equipment and in storage facilities to respond to accidental spills. If an accidental hazardous materials spill or release occurs, the certificate holder shall clean up the spill or release and shall treat or dispose of contaminated soil or other materials according to applicable regulations. (App G-2, V-3) [AMD5]

(33) The certificate holder shall provide to the Department of Energy a copy of the contract with the Milton-Freewater Rural Fire Department for fire protection services during construction and operation of the facility before beginning construction. (App U-25) [Amendment #4; AMD5]

(34) During construction and operation of the facility, the certificate holder shall have water-carrying trailers ("water buffaloes") at appropriate locations around the facility. The certificate holder shall bring a water buffalo to any job site where there is a substantial risk of fire. The certificate holder shall coordinate with the fire chiefs of the Helix and Milton-Freewater Rural Fire Departments as to the number, capacity and location of the water buffaloes. The certificate holder shall make sure that each water buffalo has a minimum capacity of 350 gallons with sufficient pump and hose equipment, as approved by the local fire chiefs. The certificate holder shall have service trucks and pickup trucks capable of

towing water buffaloes available in sufficient numbers at all times during construction and operation of the facility. (App B-12) [AMD5]

(35) The certificate holder shall take steps to protect the facility and property from unauthorized access and to reduce the risk of accidental injury during construction and operations by (App U-25, 26) [Amendment #3; AMD5]:

(a) Maintaining fencing and access gates around dangerous equipment or portions of the site as feasible. [Amendments #3 and #4]

(b) Posting warning signs near high-voltage equipment.

(c) Requiring construction contractors to provide specific job-related training to employees, including cardiopulmonary resuscitation, first aid, tower climbing, rescue techniques and safety equipment inspection.

(d) Requiring each worker to be familiar with site safety.

(e) Assigning safety officers to monitor construction activities and methods during each work shift.

(f) Ensuring that workers on each shift are certified in first aid.

(g) Ensuring a well-stocked first-aid supply kit is accessible on-site at all times and that each worker knows its location.

(h) Conducting periodic safety meetings for construction and maintenance staff.

(36) The certificate holder shall notify the Department of Energy and the Umatilla County Planning Department of any accidents including mechanical failures on the site associated with the operation of the wind power facility that may result in public health and safety concerns. (ORS 469.310) [Amendment #4; AMD5]

(37) To reduce the visual impact of the facility, the certificate holder shall:

(a) Design, construct and operate a facility consisting of the major structures and related or supporting facilities described in the Site Certificate. [Amendments #1, #2 and #4]

(b) Group the turbines in strings of 2 to 37. [Amendments #1, #2 and #4]

(c) Construct each turbine to be not more than 263 feet tall at the turbine hub and with a total height of not more than 416 feet with the nacelle and blades mounted (App B-5) [Amendment #4][4]

(d) Mount nacelles on smooth, hollow steel towers. [Amendment #4]

(e) Paint all towers uniformly in a neutral light gray or white color. [Amendments #2 and #4]

(f) Not allow any advertising to be used on any part of the facility or on any signs posted at the facility, except that the turbine manufacturer's logo may appear on turbine nacelles. (App BB-2)

(g) Use only the minimum lighting on its turbine strings required by the Federal Aviation Administration, except:

(i) The Stateline 1&2 satellite operations and maintenance building may have a small amount of low-impact exterior lighting for security purposes (App BB-2).

(ii) Low-impact lighting may be used for occasional nighttime repairs, operations or maintenance at the substation (at other times this lighting would be turned off).

(iii) Security lighting may be used at the Vansycle II O&M building and substation if it is shielded or downward-directed to reduce glare.

[Amendments #2 and #4]

[4] See also site certificate Condition 137.

(h) Use only those signs required for facility safety or required by law and comply with Umatilla County design requirements for signs as described in UCDC Sections 152.545 through 152.548. (App BB-2) [Amendment #4]

(i) Design and construct the operation and maintenance building to be generally consistent with the character of similar buildings used by commercial farmers or ranchers. Upon retirement of the energy facility, the operations and maintenance building must be removed or converted to farm use, in accordance with Condition 19. [Amendment #3 and #4]

(38) To restrict public access to turbine towers, the certificate holder shall install locked access doors accessible only to authorized project staff. (App BB-3)

(39) If any state-listed threatened, endangered or candidate plant species are found during the pre-construction surveys described in condition (55), the certificate holder shall use appropriate measures to protect the species and mitigate for impacts from construction, operation and retirement of the facility.

See condition (55).

(40) In constructing and operating the facility, the certificate holder shall make reasonable efforts not to disturb the farming and ranching activities on adjacent lands. (App K-6) [AMD5]

(41) If the certificate holder elects to use a bond to meet the requirements of Conditions (80) or (109), 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 assure 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. [Amendments #1, #2 #4, and #5]

See Condition (2).

2. Conditions That Must Be Met Before Construction Begins

(42) The certificate holder shall notify the Department of Energy in advance of any initial road improvement work that does not meet the definition of "construction" in OAR 345-001-0010(10) or ORS 469.300(6) and shall provide to the Department plans of the work and evidence that its value is less than $250,000. (App B-21) [Amendment #4; AMD5]

(43) [Condition removed by Amendment #4]

(44) The certificate holder shall locate roads to minimize disturbance and maximize transportation efficiency and to avoid sensitive resources and unsuitable topography. The certificate holder shall use existing county roads and private farm roads to the maximum extent feasible. The certificate holder shall coordinate farm road improvements with landowners to minimize crop impacts and to assure that the final road provides useful access, where possible, to the landowners' fields. (App B-6)

(45) The certificate holder shall videotape all Umatilla County roads used as access to the facility and shall require construction contractors to enter into a written agreement with

Umatilla County stating that all roads used by the contractor will be restored to as good or better condition than they were before construction. (App U-24)

(46) The certificate holder shall notify the Department of Energy of the identity and qualifications of major construction contractors for the facility. The certificate holder shall select major construction contractors based on a proven record of environmental compliance and stewardship, a clean record in terms of other regulatory obligations and other appropriate factors. (App D-3, 4) [Amendment #4; AMD5]

(47) 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.
See condition (2). [AMD5]

(48) The certificate holder shall require that all on-site construction contractors prepare a site health and safety plan before beginning construction activities. The certificate holder shall ensure that the plan informs employees and others onsite what to do in case of emergencies and includes the locations of fire extinguishers and nearby hospitals, important telephone numbers and first aid techniques. (App U-25) [AMD5]

(49) The certificate holder shall design the facility in accordance with seismic design provisions given in the Oregon Building Code. The certificate holder shall identify localized areas of S_C and S_D soil types and assure that any structures to be built in those areas are designed according to the code. The certificate holder shall design all components constructed after 2008 to meet the current Oregon Structural Specialty Code (OSSC 2007) and the 2006 International Building Code. [Amendment #4; AMD5]

(50) The certificate holder shall provide the Department of Energy with design specifications showing the locations of turbines and type of foundations to be employed and demonstrating that the following conditions have been satisfied (OAR 345-022-0020):

(a) If a turbine is located within 50 feet of a slope steeper than 30°, the stability of the slope has been reviewed by the foundation designer to confirm that either (i) the slope has a safety factor of at least 1.1 during the maximum probable seismic event or (ii) the safety factor is less than 1.1, but ground displacements will not adversely affect the stability of the wind turbine. Slopes shall be evaluated in the field for each proposed turbine location.

(b) The foundation designer's review of slope displacement during a seismic event has been made using a pseudo-static horizontal coefficient of 0.13g and, if the safety factor is less than 1.1, the foundation designer has shown that (i) the movement will not intersect the turbine, (ii) the movement will intersect the turbine but will not affect its stability, or (iii) additional stabilization measures, such as anchor tie-downs or ground support systems, will be employed to maintain stability.

(c) If a turbine is located where power generating or other requirements preclude sufficient setback distances to avoid intersection of a moving slope with the turbine foundation, the foundation designer has demonstrated that the turbine foundation will withstand loads from the moving soil or has been equipped with ground support systems that will withstand loads from moving soil.

(d) The foundation designer has confirmed that the turbines and conduit can tolerate some movement without instability or breakage if a mapped fault were to rupture.

[Amendment #4]

(51) In modifying slope angles for roads or other facilities, the certificate holder shall assure that the foundation designer has achieved a factor of safety of 1.5 or greater for permanent structures and a factor of safety of 1.3 or greater for temporary structures. (OAR 345-022-0020)

(52) The certificate holder shall design the facility to avoid or minimize adverse impacts to wildlife by measures including but not limited to the following (App P-41):

(a) Siting the turbines on ridges outside of migration flyways.

(b) Siting turbines to avoid placing turbines in saddle locations along ridges (where bird use is typically higher).

(c) Avoiding the use of overhead collector lines. [Amendments #2 and #4]

(53) This condition does not apply to Stateline 2. The certificate holder shall survey the status of known Swainson's hawk nests within the vicinity of proposed construction before the projected date for construction to begin. If active nests are found, and construction is scheduled to begin before the end of the sensitive nesting and breeding season (June 1 to August 31), the certificate holder shall develop a no-construction buffer in consultation with ODFW and shall not engage in construction activities within the buffer until the sensitive season has ended. If construction continues into the sensitive nesting and breeding season for the following year, the certificate holder shall not engage in construction activities within the buffer around active nests until the sensitive season has ended. [Amendments #2,#4; AMD5]

(54) This condition does not apply to Stateline 2. The certificate holder shall conduct appropriate pre-construction nest surveys for burrowing owls if construction is scheduled to occur during the sensitive period (March 15 to August 30). The certificate holder shall leave a no-construction buffer, developed in consultation with ODFW, around any active nests during the sensitive period. [Amendments #2,#4, AMD5]

(55) This condition does not apply to Stateline 2. The certificate holder shall conduct pre-construction surveys for state-listed threatened, endangered or candidate plant species in all areas not included in earlier botanical surveys of the analysis area. If any listed plants are found, the certificate holder will notify the Department of Energy and consult with the Oregon Department of Agriculture regarding appropriate measures to protect the species and mitigate for impacts from construction, operation and retirement of the facility. (App Q-7) [Amendment #4; AMD5]

(56) This condition does not apply to Stateline 2. The certificate holder shall conduct appropriate pre-construction surveys for the presence of Washington ground squirrels in construction zones that have suitable habitat. Construction zones include the areas of permanent and temporary disturbance and a 175-foot surrounding buffer in which there may be incidental construction impacts. If squirrel activity is found, the certificate holder shall notify the Department of Energy and develop an appropriate no-construction buffer and other appropriate mitigation measures in consultation with the Department and ODFW. In addition, the certificate holder shall map and stake sensitive areas to be avoided during construction as required by Condition (63). [Amendments #2,#4; AMD5]

3. Conditions That Apply During Construction

(57) The certificate holder shall report to the Council any change of major construction contractors.

See condition (8).

(58) The certificate holder shall take steps to prevent fires during construction including but not limited to (App U-25):

(a) Establishing roads before accessing the site to allow vehicles to stay away from grass.

(b) Using diesel vehicles whenever possible to prevent potential ignition by catalytic converters.

(c) Avoiding idling vehicles in grassy areas.

(d) Keeping cutting torches and similar equipment away from grass.

(e) Making sure that all construction personnel receive appropriate fire-safety instruction from qualified local fire departments or qualified fire-fighting trainers on the job site.

(f) Making sure that fire-fighting equipment is available at all active parts of the job site. [AMD5]

(59) The certificate holder shall require the foundation designer to inspect excavations during construction of foundations for the turbines and other facilities to confirm that geologic conditions are appropriate for supporting the turbines during gravity, seismic and wind loading. (OAR 345-022-0020)

(60) 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 facility's National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit. The certificate holder shall include in the ESCP any procedures necessary to meet local erosion and sediment control requirements or stormwater management requirements. (App B-7, 13, E-3, P-41) [AMD5]

(61) The certificate holder shall mitigate potential adverse impacts to soils from erosion and compaction by measures including but not limited to the following (App H-17, I-4, 5):

(a) Maintaining vegetative buffer strips between the areas impacted by construction activities and any receiving waters.

(b) Installing sediment fence/straw bale barriers at locations shown on the plans.

(c) Wherever feasible, constructing roadways so that surface drainage continues along natural drainage patterns with minimal diversions through ditches and culverts.

(d) Working with the Umatilla County Public Works Department and the local Natural Resources Conservation Service office to design water bars and other management practices to slow the flow of water on newly constructed repaired roads.

(e) Straw mulching and discing at locations adjacent to the road that have been impacted.

(f) Providing temporary sediment traps downstream of intermittent stream crossings.

(g) Providing sedimat type mats downstream of perennial stream crossings.

(h) Planting designated seed mixes at impacted areas adjacent to the roads.

(i) Installing sediment fencing along the downslope side of construction equipment staging areas.

(j) Seeding all areas that are impacted by construction and reseeding as necessary to establish a healthy cover crop.

(k) Leaving sediment fencing, check dams and other erosion control measures in place until the impacted areas are well vegetated and the risk of erosion has been eliminated.

(l) Limiting truck and heavy equipment traffic, to the extent possible, to improved road surfaces, and thereby limiting soil compaction and disturbances.

(m) Scarifying and reseeding compacted areas after construction is completed.

(n) Using appropriate erosion control methods to limit soil loss due to water and wind action.

(o) Covering roads and turbine pads with gravel immediately following exposures, thereby limiting the time for wind or water erosion. (App I-2, 3)

(p) Using water for dust suppression during construction. (App O-1)

[AMD5]

(62) The certificate holder shall place underground electrical and communications cables at a minimum depth of three feet below grade in trenches along the length of each turbine string corridor and in some cases in trenches from the end of one turbine string to the end of an adjacent turbine string. The certificate holder shall excavate trenches and segregate the topsoil from subsoil. After installing the electrical or communications cables and within two weeks of trenching, the certificate holder shall backfill the trenches and replace topsoil on top. The certificate holder shall reseed the area with native grasses or other plants appropriate to the location. (App B-8, I-2, W-2)

(63) The certificate holder shall mitigate possible impacts to wildlife by measures including but not limited to the following (App P-42 through 45, Q-10, 11):

(a) Preparing maps to show sensitive areas that are off-limits during the construction phase, distributing the maps to construction staff and having a biologist flag sensitive areas as needed.

(b) Minimizing road construction and vehicle use where possible.

(c) Posting speed limit signs throughout the construction zone.

(d) Instructing construction personnel (including all construction contractors and their personnel) on sensitive wildlife of the area and on required precautions to avoid injuring or destroying wildlife.

(e) Instructing construction personnel (including all construction contractors and their personnel) to watch out for wildlife while driving through the project area, to maintain reasonable driving speeds so as not to harass or accidentally strike wildlife and to be particularly cautious and drive at slower speeds in a period from one hour before sunset to one hour after sunrise when some wildlife species are the most active.

(f) Requiring all construction personnel to report any injured or dead wildlife detected at the facility site.

(g) Requiring all construction personnel to respect all staked wildlife areas and associated no-construction buffer areas.

[AMD5]

(64) To avoid creating habitat for raptor prey near turbine towers, the certificate holder shall spread gravel on all above ground portions of the turbine pads to reduce the potential for weed infestation. (App BB-5)

(65) The certificate holder shall mitigate possible impacts to fish and wildlife habitat by measures including but not limited to the following (App P-42 through 45, Q-10, 11):

(a) Avoiding vegetation removal wherever possible.

(b) Limiting construction activities to within public road right-of-ways where possible.
(c) Using best management practices to prevent erosion of soil into stream channels.
(d) Controlling invasive, weedy plant species during maintenance of project facilities.
(e) Restoring temporarily disturbed sites to pre-construction condition or better with native seed mixes as described for temporarily disturbed areas in the *Revegetation Plan* included in the Final Order on Amendment #4 as Attachment B and as revised from time to time. [Amendments #1 and #4]
(f) Developing re-vegetation plant mixes and habitat enhancement locations in consultation with ODFW and the Umatilla County weed control board.
(g) Monitoring re-vegetated areas to ensure successful establishment of new vegetation.
(h) Monitoring turbine strings, roads and other disturbed areas regularly to prevent the spread of noxious weeds.
(i) Developing measures to reduce the potential spread of noxious weeds in consultation with the weed control board of Umatilla County.
[AMD5]

(66) This condition applies to Stateline 1 only. To mitigate for the permanent elimination of one-half acre of Category 2 habitat, the certificate holder shall control weeds and enhance habitat of one acre of weed-infested upland habitat with native plants. The certificate holder shall carry out enhancement activities as described for habitat enhancement areas in the *Revegetation Plan* referenced in Condition 65. The certificate holder shall acquire the legal right to create and maintain the enhancement area for the life of the facility by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department of Energy. The certificate holder shall determine the location of this habitat enhancement area in consultation with ODFW and landowners. (App P-44) [Amendments #1 and #4]

(67) This condition does not apply to Stateline 3. To mitigate for the permanent elimination of approximately 48 acres of Category 3 habitat, the certificate holder shall control weeds and enhance habitat on an equal area of weed-infested land in the project vicinity. The certificate holder shall carry out enhancement activities as described for habitat enhancement areas in the *Revegetation Plan* referenced in Condition 65. The certificate holder shall acquire the legal right to create and maintain the enhancement area for the life of the facility by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department of Energy. The certificate holder shall determine the location of this habitat enhancement area in consultation with ODFW and landowners. (App P-44) [Amendments #1 and #4]

(68) To minimize impacts to temporarily disturbed Category 6 habitat areas, the certificate holder shall use measures including but not limited to the following (App P-45):
(a) Replacing agricultural topsoil to its pre-construction condition.
(b) Using best management practices to prevent loss of topsoil during construction.
(c) Reseeding native habitats with a native seed mix that includes at least some seed collected from the area as described for temporarily disturbed habitats in the *Revegetation Plan* referenced in Condition 65. [Amendments #1 and #4]
(d) Controlling noxious weeds in areas disturbed by construction activities.
[AMD5]

(69) The certificate holder shall not place any part of the facility within any Washington ground squirrel (WGS) colony or on potential Washington ground squirrel burrows. The certificate holder shall have an on-site wildlife monitor who will flag habitat required for WGS survival (Category 1), conduct pre-construction surveys to determine the distribution of WGS in the area and ensure that construction personnel do not enter the area. The monitor shall conduct post construction monitoring to document distribution of the WGS in the area. [Amendments #2,#4; AMD5]

(70) To reduce potential injury or fatality of migratory birds, the certificate holder shall (App Q-10):

(a) Locate turbines away from saddles in long ridges.

(b) Locate turbines on the top or slightly downwind side of distinct ridges and set back from the upwind (prevailing) side.

(c) Use monopole design for all turbine and meteorological towers.

(71) The certificate holder shall implement a waste management plan during construction that includes but is not limited to the following measures (App V-2):

(a) Collecting steel scrap and transporting it to a recycling facility.

(b) Recycling wood waste to the greatest extent feasible, depending on size and quantity of scrap or leftover materials.

(c) Using concrete waste as fill on-site or at another site or, if no reuse option is available, transporting it to a local landfill.

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

(e) Collecting non-recyclable waste and transporting it to a local landfill.

(72) The certificate holder shall require that disposal of waste concrete on-site is conducted in accordance with OAR 340-093-0080, other applicable regulations and this condition. The construction contractor may bury waste concrete on-site with the permission of the landowner in the following manner: by placing the waste concrete in an excavated hole, covering it with at least three feet of topsoil and grading the area to match existing contours so that all buried concrete is at least three feet below grade. (App V-3, 4).

(73) The certificate holder shall provide portable toilets for onsite sewage handling during construction and make sure that they are pumped and cleaned regularly by a licensed pumper who is qualified to pump and clean portable toilet facilities. The certificate holder shall minimize the generation of wastes from construction through detailed estimating of materials needs and through efficient construction practices. The certificate holder shall recycle any wastes generated during construction as much as feasible and shall collect any non-recyclable wastes and transport such wastes to a local landfill. (App B-13, G-3, V-2) [AMD5]

(74) The certificate holder shall have a full-time on-site assistant construction manager, qualified in environmental compliance and familiar with all site certificate conditions, to observe contractor waste management practices and to assure compliance with applicable regulations and construction site policy. (App V-4) [AMD5]

(75) The certificate holder shall post high-visibility no-entry barriers around recorded cultural and archaeological sites and shall to ensure that construction workers stay away from the vicinity of the sites. The certificate holder shall locate barriers to create a buffer with a minimum width of 30 meters between the sites and construction activities. The certificate

holder shall have a qualified cultural resource expert to monitor the avoidance of the no-entry areas by construction workers and to monitor ground disturbing activities. The certificate holder shall select a cultural resource expert chosen by the Confederated Tribes of the Umatilla Indian Reservation, if available, or shall select a qualified cultural resource expert, subject to Department approval, to conduct the monitoring. [Amendment #4]

(76) If previously unidentified cultural resources are encountered during construction, the certificate holder shall halt earth-disturbing activities in the immediate vicinity of the find, in accordance with Oregon state law (ORS 97.745 and 358.920), and shall notify the Department of Energy, the Oregon State Historic Preservation Officer (SHPO) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The certificate holder shall have a qualified archaeologist evaluate the discovery and recommend subsequent courses of action in consultation with the CTUIR and the SHPO. If human remains are discovered, the certificate holder shall halt all construction activities in the immediate area and shall notify the Department, SHPO, CTUIR, the County Medical Examiner and the State Police. [Amendment #4]

(77) The certificate holder shall include traffic control procedures in contract specifications for construction of the facility. The certificate holder shall require flaggers to be at appropriate locations at appropriate times during construction to direct traffic and to ensure minimal conflicts between harvest and construction vehicles. (App U-24) [AMD5]

(78) The certificate holder shall confine the noisiest construction activities to the daylight hours. (App X-8) [AMD5]

(79) This condition does not apply to Stateline 3. The certificate holder shall construct the cable crossing of Vansycle Canyon at a time when the stream is dry. The certificate holder shall remove no more than approximately 7.5 cubic yards of material from the streambed crossing and shall replace a like amount of fill material after the cable has been laid, restoring the area similar to the original contours of the streambed. (Linehan, July 23 letter, 3) [Amendment #4]

4. Conditions That Must Be Met Before Operation Begins

(80) This condition applies to Stateline 1&2 only. Within 90 days after the effective date of the Fourth Amended Site Certificate, the certificate holder shall submit to the State of Oregon through the Council a bond or letter of credit in the amount of $6.160 million (1st Quarter 2009 dollars), to be adjusted to the date of issuance as described in (a), naming the State of Oregon, acting by and through the Council, as beneficiary or payee.

(a) Subject to approval by the Department, the certificate holder shall adjust the amount of the bond or letter of credit on an annual basis using the following calculation:

(i) Adjust the Subtotal (1st Quarter 2009 dollars) shown in Table 1 of the Final Order on Amendment #4 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 1st 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 1st 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) to determine the adjusted Full Cost, and round the resulting total to the nearest $1,000 to determine the adjusted financial assurance amount for the reporting year.

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

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

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

(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 (8).

See Conditions (19) and (41).

[Amendment #4]

(81) After construction is complete, the certificate holder shall restore the county roads to at least their pre-project condition, to the satisfaction of the county public works department. (App B-6, 9) [AMD5]

(82) The certificate holder shall grade and reseed laydown areas to wheat or native grasses as necessary to restore those areas to their pre-construction condition (App B-10). [AMD5]

(83) For any materials disposed of as fill on site, the certificate holder shall conduct such disposal with the approval of the landowner and in accordance with OAR 340-093-0080 and other applicable regulations. (App G-3, V-3) [AMD5]

(84) For the purposes of this site certificate, wind turbine tower locations are analogous to location of permanent rights-of-way for pipelines or transmission lines as described in OAR 345-027-0023(5). The Council approves the corridor described in the final order for construction of turbine strings. As required under OAR 345-027-0020(2) and Condition 13, the certificate holder shall submit to the Department of Energy a legal description of the location where the certificate holder has built turbine towers and other parts of the facility. Within 90 days after beginning operation of any turbines that are added to the facility by amendment of the site certificate, the certificate holder shall submit to the Department a legal description of the location of any additional turbine towers and related or supporting facilities allowed by the amendment. The site of the facility is the area identified by the legal descriptions required by this condition. Within 90 days after beginning facility operation, the certificate holder shall provide to the Department and the Umatilla County Planning Department the actual latitude and longitude location or Stateplane NAD 83(91) coordinates of each turbine tower, connecting lines and transmission lines and a summary of as built changes in the facility from the original plan. (OAR 345-027-0020(2) and (3)) [Amendments #1 and #4]

See Condition (13).

5. Conditions That Must Be Met During Operation

(85) The certificate holder shall prepare and maintain a site health and safety plan that informs employees and others onsite what to do in case of emergencies and includes the locations of fire extinguishers and nearby hospitals, important telephone numbers and first aid techniques. (App U-25)

(86) The certificate holder shall recycle solid waste generated during operation of the facility as much as feasible and shall collect non-recyclable waste and transport it to a local landfill. (App V-2)

(87) This condition applies to Stateline 1&2 only. The certificate holder shall provide portable toilets for use at the satellite O&M building and shall make sure that they are pumped and cleaned regularly by a licensed pumper who is qualified to pump and clean portable toilet facilities. The certificate holder must contact the Oregon Department of Environmental Quality if the on-site septic system is to be used. (App O-2) [Amendment #4]

(88) If the turbine blades need to be washed, the certificate holder shall use no more than 500 gallons of water per turbine, trucked to the site by a contractor and purchased from a source with a valid water right. The certificate holder shall use high-pressure cold water only and shall not use chemicals or additives in the wash water. (App O-2) [Amendment #1]

(89) If any new nesting or denning sites for wildlife species of concern are located, the certificate holder shall prepare maps indicating off-limit areas. In addition, the certificate holder shall minimize road construction and vehicle use where possible. (P-42)

(90) The certificate holder shall mitigate possible impacts to wildlife by measures including but not limited to the following (App P-43, Q-10):

(a) Instructing all personnel on sensitive wildlife of the area and on required precautions to avoid injuring or destroying wildlife.

(b) Instructing all personnel to watch out for wildlife while driving through the project area, to maintain reasonable driving speeds so as not to harass or accidentally strike wildlife and to be particularly cautious and drive at slower speeds in a period from one hour before sunset to one hour after sunrise when some wildlife species are the most active.

(c) Requiring all personnel to report any injured or dead wildlife detected at the facility site.

(91) The certificate holder shall mitigate possible impacts to fish and wildlife habitat by measures including but not limited to the following (App P-43, Q-10):

(a) Using best management practices to prevent erosion of soil into stream channels.

(b) Controlling invasive, weedy plant species during maintenance of project facilities.

(c) Monitoring re-vegetated areas to ensure successful establishment of new vegetation.

(92) The certificate holder shall mitigate potential adverse impacts to soils from erosion by measures including but not limited to the following (App I-3 through 5):

(a) Using drainage collection procedures to capture surface water that collects on, and drains from, gravel surfaces or structures as a result of precipitation and routing the water to drainage ditches lined with quarry stone or other similar materials.

(b) Using sand bags, straw bales and silt fences as needed to reduce erosion from precipitation during repair of underground cables or other soil-disturbing repairs.

(c) If areas of erosion are observed during operation, implementing mitigation and reclamation measures.

(93) The certificate holder shall conduct wildlife monitoring as described in the *Wildlife Monitoring and Mitigation Plan (WMMP)*, included in the Final Order on Amendment #5 as Attachment G and as revised from time to time. Subject to approval by the Department of Energy as to professional qualifications, the certificate holder shall hire qualified wildlife consultants to carry out the monitoring.

The certificate holder shall conduct 1-year of post-construction fatality monitoring in accordance with the protocol included in the WMMP following completion of construction activities for the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate. Additional fatality monitoring studies and necessity of additional mitigation shall be determined based on the results of the 1-year post construction fatality monitoring study.

(OAR 345-022-0060) [Amendments #1, #4; AMD5]

(94) If analysis of monitoring data indicates impacts to wildlife or wildlife habitat that the certificate holder has not adequately addressed by mitigation and if these impacts result in a loss of habitat quantity or quality, the certificate holder shall mitigate for the loss of habitat quality by measures approved by the Oregon Department of Energy. (OAR 345-022-0060) [Amendment #4; AMD5]

(95) The certificate holder shall inspect turbine blades on a regular basis for signs of wear or potential failure. (App BB-1) [AMD5]

(96) The certificate holder shall make sure that all on-site employees receive annual fire prevention and response training by a professional fire-safety training firm. The certificate

holder shall prohibit employees from smoking outside of company vehicles during dry summer months and shall require employees to keep vehicles on roads and off dry grassland during the dry months unless necessary for work purposes. The certificate holder shall not engage in welding, cutting, grinding or other flame or spark-producing operations near the turbines. The certificate holder shall equip each company vehicle on site with a fire extinguisher, water spray can, shovel, Emergency Response procedures book and a two-way radio for immediate communications with the O&M facility. The certificate holder shall have staff in the local area on call at all times to respond in case of fire or other emergency. The certificate holder shall supply all local fire departments with maps of and gate keys to the facility. (App B-12) [AMD5]

VI. CONDITIONS ADDED BY AMENDMENT #1 [Amendments #1 and #4]

The conditions listed in this section include conditions based on representations in the request for Amendment #1 and supporting record. The Council deems these representations to be binding commitments made by the applicant. These conditions are required under OAR 345-027-0020(10). [Amendment #4]

Except as specifically noted, these conditions apply to all phases of the Stateline Wind Project. In applying the conditions in this section, "certificate holder" means FPL Vansycle with regard to Stateline 1&2 and FPL Stateline with regard to Stateline 3. [Amendment #4]

1. General Conditions

(97) This condition applies to Stateline 2 only. The certificate holder shall begin construction of Stateline 2 within six months after the effective date of the First Amended Site Certificate. The certificate holder shall complete construction of Stateline 2 before March 1, 2005. Under OAR 345-027-0070, an amended site certificate is effective upon execution by the Council Chair and the applicant. Completion of construction occurs upon the date commercial operation of Stateline 2 begins. The Council may grant an extension of the construction beginning or completion deadlines in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted. [Amendments #2 and #4]

(98) [Condition removed by Amendment #4]

(99) 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. (OAR 345-027-0020(15) [Amendment #4]

(100) 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 Department of Energy 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 a 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. (OAR 345-027-0020(16) [Amendment #4]

2. Conditions That Must Be Met Before Construction Begins

(101) This condition applies to Stateline 2 only. The certificate holder shall not engage in construction activities for Stateline 2 facilities, including the movement of heavy trucks and equipment, within a ¼-mile buffer around an identified ferruginous hawk nest tree during the sensitive period of the nesting season (March 20 to August 15), except as provided in this condition. The certificate holder shall use a protocol approved by the Oregon Department of Fish and Wildlife (ODFW) to determine whether the nest is occupied. The certificate holder may begin construction activities before August 15 if the nest is not occupied. If the nest is occupied, the certificate holder shall use a protocol approved by ODFW to determine when the young are fledged (independent of the core nest site). With the approval of ODFW, the certificate holder may begin construction before August 15 if the young are fledged. During the specified nesting season, the certificate holder may use the road into the site with vehicles that are one ton in capacity or smaller; conduct turbine, turbine tower, blade or met tower construction activities that are not visible above the horizon from the vantage point of the ferruginous hawk nest; and use the road one time to transport heavy equipment off the site. [Amendments #2 and #4]

(102) [Condition removed by Amendment #4]

3. Conditions That Apply During Construction

(103) To minimize the risk of fire, the certificate holder shall:

(a) Construct turbines, towers and pads of fire retardant materials.
(b) Bury electrical cables.
(c) Use enclosed, locked pad-mounted transformer structures.
(d) Include built-in fire prevention measures in turbines.
(e) Not store combustible materials at the Stateline site.

(104) This condition applies to Stateline 2 only. To mitigate for the permanent elimination of approximately 1 acre of Category 3 and 4 habitat, the certificate holder shall enlarge the habitat enhancement area described in Condition (67) by 1 acre. [Amendment #4]

4. Conditions That Must Be Met During Operation

(105) This condition applies to Stateline 2 only. The certificate holder shall enter into an agreement with the landowner of a property identified as 84301 Stockman Road, Helix, Oregon, requiring that the structure remain uninhabited during construction. The certificate holder shall continue the no-occupation agreement until retirement of the facility unless the certificate holder demonstrates to the satisfaction of the Department that the facility complies with the applicable noise control regulations under OAR 340-035-0035. The certificate holder may demonstrate compliance with the regulations as to the increase in

ambient statistical noise levels by entering into a legally effective easement or real covenant with the owner of the property identified as 84301 Stockman Road, Helix, Oregon, pursuant to which the owner 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. A legally effective easement or real covenant shall: 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. If such easement or real covenant is not in effect, then the certificate holder shall demonstrate to the satisfaction of the Department, based on modeling or measurements performed in compliance with OAR 340-035-0035, that an easement or real covenant is not necessary to comply with those regulations. [Amendments #3 and #4].

VII. CONDITIONS ADDED BY AMENDMENT #2 [Amendments #2 and #4]

The conditions listed in this section include conditions based on representations in the request for Amendment #2 and supporting record. The Council deems these representations to be binding commitments made by the applicant. These conditions are required under OAR 345-027-0020(10). These conditions apply to Stateline 3 only. In applying the conditions in this section, "certificate holder" means FPL Stateline. [Amendment #4]

1. General Conditions

(106) The certificate holder shall begin construction of Stateline 3 by October 1, 2009. The certificate holder shall complete construction of Stateline 3 before December 31, 2010. Under OAR 345-027-0070, an amended site certificate is effective upon execution by the Council Chair and the applicant. Completion of construction occurs upon the date commercial operation of Stateline 3 begins. The Council may grant an extension of the construction beginning or completion deadlines in accordance with OAR 345-027-0030 or any successor rule in effect at the time the request for extension is submitted. [Amendments #3 and #4]

(107) [Condition removed by Amendment #4]

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

(a) Designing and operating the transmission lines so that maximum current (amps per conductor) would not exceed the following levels: For 34.5-kV underground lines, 560 amps and for 230-kV transmission lines, 753 amps. [Amendment #4]

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

2. Conditions That Must Be Met Before Construction Begins

(109) Before beginning construction of Stateline 3, 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 $5.911 million (in 1st Quarter 2009 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 Stateline 3 by applying the unit costs and general costs illustrated in Table 3 in the Final Order on Amendment #4 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) Subject to approval by the Department, the certificate holder shall adjust the amount of the bond or letter of credit on an annual basis using the following calculation:

(i) Adjust the Subtotal component of the initial bond or letter of credit amount (expressed in 1st 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 1st 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 1st 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) to determine the adjusted Full Cost, 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, as required by Condition (8).

(f) The bond or letter of credit shall not be subject to revocation or reduction before retirement of the Stateline 3 site.

[Amendment #4]

(110) At least 30 days before beginning preparation of detailed design and specifications for the electrical transmission lines, the certificate holder shall consult with the Oregon Public Utility Commission staff to ensure that its designs and specifications are consistent with applicable codes and standards.

(111) [Condition removed by Amendment #4]

3. Conditions That Apply During Construction

(112) Before beginning construction and after considering all micrositing factors, the certificate holder shall provide to the Department and to the Oregon Department of Fish and Wildlife (ODFW) detailed maps of the facility site, showing the final design locations where the certificate holder proposes to build facility components and the habitat categories of all areas that would be affected during construction. In addition, the certificate holder shall provide a table showing the acres of temporary and permanent habitat impact by habitat category and subtype, similar to Table 8 in the Final Order on Amendment #4. 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. Based on the approved habitat assessment, the certificate holder shall calculate the mitigation area requirement and shall carry out enhancement activities as described in the *Stateline 3 Habitat Mitigation Plan* included in the Final Order on Amendment #4 as Attachment C and as revised from time to time. The certificate holder shall acquire the legal right to create and maintain the enhancement area for the life of the facility by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department of Energy. The certificate holder shall determine the location of this habitat enhancement area in consultation with ODFW and landowners. [Amendment #4]

(113) To protect the public from electrical hazards including electric and magnetic field exposure, the certificate holder shall:

(a) Enclose the substation with a seven-foot-tall chain link fence with barbed wire at the top pointing out at a 45-degree angle.

(b) Attach the 230-kV aboveground transmission lines to H-frame structures that consist of two wooden poles connected by cross-members with a typical overall height of 61 feet and a minimum design ground clearance of 25 feet to the lowest conductor as described in the Request for Amendment #4.

(c) Design and construct the transmission lines so that:

(i) Alternating current electric fields during operation do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public, and

(ii) Induced voltages during operation are as low as reasonably achievable.

[Amendment #4]

(114) To deter raptors from perching on transmission support structures near the wind turbines, the certificate holder shall install anti-perching devices on all proposed support structures within one-half mile of any turbine, unless the top of the support structure is below the base of the turbine tower due to topography. Wherever feasible, the certificate holder shall use "spike-type" devices instead of "triangle-type" devices. [Amendment #4]

(115) To protect raptors, the certificate holder shall design structures for 230-kV transmission lines to conform to the guidelines of the Avian Power Line Interaction Committee so that electrical conductors are spaced far enough apart to reduce the risk of bird electrocution. [Amendment #4]

(116) [Condition removed by Amendment #4]

(117) The certificate holder shall not engage in construction activities for Stateline 3 facilities, including the movement of heavy trucks and equipment, within a ¼-mile buffer around known ferruginous hawk nests during the sensitive period of the nesting season from (March 20 to August 15), except as provided in this condition. The certificate holder shall use a protocol approved by the Oregon Department of Fish and Wildlife (ODFW) to determine whether the nest is occupied. The certificate holder may begin construction activities before August 15, if the nest is not occupied. If the nest is occupied, the certificate holder shall use a protocol approved by ODFW to determine when the young are fledged (independent of the core nest site). With the approval of ODFW, the certificate holder may begin construction before August 15, if the young are fledged.

(118) The certificate holder shall construct stream crossings substantially as described in the Final Order on Amendment #4. In particular, the certificate holder shall not remove material from waters of the state or add new fill material to waters of the state such that the total volume of removal and fill exceeds 50 cubic yards for the project as a whole. [Amendment #4]

4. Conditions That Must Be Met During Operation

(119) The certificate holder shall perform frequent maintenance to keep the substation transformer in good repair and in reliable operating condition.

(120) The certificate holder shall verify that the actual sound power level output of the wind turbines constructed for Stateline 3 meets the manufacturer's warranty. This verification may consist of field measurement or other means of verification satisfactory to the Department of Energy. The certificate holder shall include the verification in the first annual report following construction of any Stateline 3 turbines. [Amendment #4]

VIII. CONDITIONS ADDED BY AMENDMENT #3

(121) [Condition removed by Amendment #4]

(122) [Condition removed by Amendment #4]

IX. CONDITIONS ADDED BY AMENDMENT #4

Except as specifically noted, the conditions in this section apply to Stateline 3[5] only. In applying the conditions in this section, "certificate holder" means FPL Stateline. In applying the conditions in this section, "certificate holder" means FPL Vansycle with regard to Stateline 1&2 and FPL Stateline with regard to Stateline 3. [Amendment #4]

(123) The certificate holder shall design and construct Stateline 3 in compliance with the County design requirements as described in Umatilla County Development Code Sections 152.010, 152.011, 152.015, 152.018, 152.063(E) and 152.616(HHH)(5)(F) in effect as of October 24, 2008. [Amendment #4]

[5] Note that Site Certificate Amendment #5 changed the name of "Stateline 3" to "Vansycle II," however, the name has not been changed in Section IX of the site certificate as these conditions were added at the time of Amendment #4, when the name "Stateline 3" was still in use.

(124) The certificate holder shall ensure that construction contractors use a transportation route reviewed and approved by the Umatilla County Public Works Director for all oversized and heavy load transport vehicles. [Amendment #4]

(125) The certificate holder shall record a Covenant Not to Sue with regard to generally accepted farming practices as required by Umatilla County Development Code Section 152.616(HHH)(2)(E). [Amendment #4]

(126) The certificate holder shall construct all Stateline 3 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 Umatilla 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.

(e) The certificate holder shall not locate equipment associated with the temporary batch plant within 50 feet of a public road, county road or utility right of way.

[Amendment #4]

(127) The certificate holder shall deliver a copy of the annual report required under Condition 8 to the Umatilla County Planning Commission on an annual basis unless specifically discontinued by the County. [Amendment #4]

(128) During construction, the certificate holder shall position a 3,000-gallon water truck on-site while personnel are present and actively working. [Amendment #4]

(129) During operation, the certificate holder shall discharge sanitary wastewater generated at the Stateline 3 O&M building to a licensed on-site septic system in compliance with county permit requirements. The certificate holder shall locate the septic system more than 100 feet from any streams, lakes or wetlands. The certificate holder shall design the septic system for a discharge capacity of less than 2,500 gallons per day. [Amendment #4]

(130) During operation, the certificate holder shall obtain water for on-site uses from a wells located at the Stateline 3 O&M building, subject to compliance with applicable permit requirements. The certificate holder shall not use more than 5,000 gallons of water per day from the on-site well. [Amendment #4]

(131) The certificate holder shall avoid permanent and temporary disturbance to all Category 1 and Category 2 habitat within the Stateline 3 site boundary. [Amendment #4]

(132) 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." [Amendment #4]

(133) Before beginning construction, the certificate holder shall provide to the Department:

(a) Information that identifies the final design locations of all Stateline 3 wind turbines to be built.

(b) The maximum sound power level for the Stateline 3 substation transformers and the maximum sound power level and octave band data for the turbines selected for the Stateline 3 based on manufacturers' warranties or confirmed by other means acceptable to the Department.

(c) The results of noise analysis of the facility, including the Stateline 3 components 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.

[Amendment #4]

(134) 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 #4; AMD5]

(135) During construction, the certificate holder shall not install any transmission line support structures within 800 feet of any active Swainson's hawk nest identified in 2008 or later. [Amendment #4]

(136) This condition applies to all phases of the Stateline Wind Project. When any third-party lien or security interest in the facility's wind turbines or turbine towers is created, the certificate holder shall notify such third party in writing that the wind turbines and towers are components an energy facility that is subject to the terms and conditions of a Site Certificate and subject to the rules of the Oregon Energy Facility Siting Council. The certificate holder shall provide to the Department a copy of each written notification

required under this condition and the name and contact information for each third party so notified. [Amendment #4]

X. CONDITIONS ADDED BY AMENDMENT #5 (Vansycle II)

The conditions listed in this section are specific to the facility modifications approved in the Fifth Amended Site Certificate re-named and solely referred to as Vansycle II.

(137) The certificate holder shall construct the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, substantially as described in Request for Amendment 5 of the site certificate, subject to the following restrictions and compliance with other site certificate conditions. Before beginning construction, the certificate holder shall provide to the Department equipment specifications and a description of the wind turbine dimensions to demonstrate compliance with this condition.

a) Vansycle II wind turbine hub height must not exceed 262.5 feet and the maximum blade tip height must not exceed 440 feet.
b) Vansycle II wind turbine rotor diameter must not exceed 354 feet.
c) Vansycle II wind turbine minimum blade tip clearance must not be lower than 85 feet above ground.

[AMD5]

(138) The certificate holder shall begin construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, within three years after the effective date of the amended site certificate [June 12, 2022]. The certificate holder shall notify the Department when construction of the of the facility modifications, as approved in Request for Amendment 5, commences. Under OAR 345-015-0085(8), the amended site certificate is effective upon execution by the Council Chair and the certificate holder.
[Mandatory Condition OAR 345-025-0006(4); AMD5]

(139) The certificate holder shall complete construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, within three years following the date of construction commencement [June 12, 2025]. The certificate holder shall promptly notify the Department of the date of completion of construction of the Vansycle II facility modifications, as approved in Request for Amendment 5.
[Mandatory Condition OAR 345-025-0006(4); AMD5]

(140) During operation of Vansycle II repowered wind turbines, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Perform inspections of the Vansycle II wind turbine foundations as part of its maintenance program in order to identify changes in the foundation conditions. Inspections will be performed in accordance with the procedures described in document titled: Tower Anchor Bolt Testing/Tensioning and Foundation Grout/Concrete Inspection, Document Number PGD-00-PM-WX-9360100, Power Generation Division, Revision Number 1.5, Revision Date: 1/18/2018.
(b) In Year 1 of operation of Vanscyle II repowered wind turbines, inspections conducted in accordance with sub(a) will be completed for each of the 43 wind turbines. In Years

2 and 3, the certificate holder may reduce the number of inspections to 10 percent, or 5 wind turbines. If all inspections in Years 1, 2 and 3 pass the acceptance criteria, inspections of a 10 percent sample size, or 5 wind turbines, may occur every 5 years for the life of the facility.

(c) Results of foundation inspections will be provided to the Department and DOGAMI in accordance with inspection schedule identified in Document Number PGD-00-PM-WX-9360100 and in the annual report. If signs of distress (noticeable degradation) are observed in the Vansycle II wind turbine foundations during the inspections and it is determined by the facility's Power Generation Division engineers and management that repairs are needed, the certificate holder will provide a remedial action plan to be reviewed by the Department and DOGAMI as soon as practicable.

(d) Any alteration of the inspection procedures and schedule described in Document Number PGD-00-PM-WX-9360100 will require notification to and consultation with the Department and DOGAMI.

[AMD5]

(141) During operation of the repowered Vansycle II wind turbines, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Perform wind turbine anchor bolt tension inspections in accordance with the technical manual titled: Tower Anchor Bolt Testing/Tensioning and Foundation Grout/Concrete Inspection, Document Number PGD-00-PM-WX-9360100, Power Generation Division, Revision Number 1.5, Revision Date 1/18/2018.

(b) In Year 1 of operation of Vanscyle II repowered wind turbines, inspections conducted in accordance with sub(a) will be completed for each of the 43 wind turbines. In Years 2 and 3, the certificate holder may reduce the number of inspections to 10 percent, or 5 wind turbines. If all inspections in Years 1, 2 and 3 pass the acceptance criteria, inspections of a 10 percent sample size, or 5 wind turbines, may occur every 5 years for the life of the facility.

(c) Any alteration of the inspection schedule and tensioning procedures described in Document Number PGD-00-PM-WX-9360100 will require notification to and consultation with the Department and DOGAMI.

[AMD5]

(142) Prior to construction associated with repowering of Vansycle II wind turbines number 1 and 21, the certificate holder shall:

(a) Provide documentation demonstrating that the county road right of way adjacent to: 1) Gerking Flat Road and, 2) Butler Grade Road have been relocated or adjusted such that wind turbines 1 and 21 satisfy the setback requirements to county road rights of way pursuant to UCDC Section 152.616(HHH)(6)(a)(4). Wind turbines not meeting the setback requirements from county road rights-of-way are precluded from increasing the maximum blade tip height from 416 to 440 feet through repower activities.

(b) The documentation shall include written verification from Umatilla County that confirms the county road rights of way have been adjusted.

[AMD5]

(143) During construction of Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Ensure all construction personnel receive environmental awareness training from a qualified professional on cultural resources and the inadvertent discovery protocols of the Inadvertent Discovery Plan.

(b) Implement and adhere to Inadvertent Discovery Plan measures previously approved in Condition 75 in the event previously unidentified cultural resources are encountered, as referenced in (i) – (iv) of this condition.

(i) The Inadvertent Discovery Plan shall establish that earth-disturbing activities be halted in the immediate vicinity of the find, in accordance with Oregon state law (ORS 97.745 and 358.920).

(ii) Within 24-hours of the find, the certificate holder shall notify the Department, SHPO and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

(iii) The certificate holder shall have a qualified archaeologist evaluate the discovery and recommend subsequent courses of action in consultation with the CTUIR and the SHPO.

(iv) If human remains are discovered, the certificate holder shall halt all construction activities in the immediate area and shall notify the Department, SHPO, CTUIR, the County Medical Examiner and the State Police.

[RFA5]

(144) During construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) Provide notice to adjacent landowners when repowering takes place to help minimize access disruptions;

(b) Provide proper road signs and warnings, including "Oversized Load," "Truck Access," or "Road Crossings;"

(c) Implement traffic diversion equipment, such as advance signs and pilot cars whenever possible when slow or oversized loads are being hauled;

(d) Encourage carpooling for the workforce to reduce traffic volume;

(e) Employ flag persons as necessary to direct traffic when large equipment is exiting or entering public roads to minimize risk of accidents; and

(f) Maintain at least one travel lane so that roadways will not be closed to traffic because of vehicles entering or exiting public roads.

[AMD5]

(145) During construction of the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall ensure its third-party contractors reuse or recycle wind turbine blades, hubs and other removed wind turbine components to the extent practicable. The certificate holder shall report in its semi-annual report to the Department the quantities of removed wind turbine components recycled, reused, sold for scrap, and disposed of in a landfill. [AMD5]

(146) Prior to construction of Vansycle II wind turbine repower, as approved in the Fifth Amended Site Certificate, 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 change in maximum blade tip height of the wind turbines to be repowered. Determination of No Hazards or other comments from FAA or Oregon Department of Aviation shall be provided to the Department.
[AMD5]

(147) For the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall:

(a) During design, select temporary staging areas based on a location with minimal noise impacts and proximity to noise sensitive receptors.

(b) Prior to construction, provide notice to landowners within 1-mile of the site boundary to inform of the construction start date, duration and description of activities and noise levels. The notice shall include the name and phone number of the certificate holder's representative which can be contacted to record construction-related noise complaints.
[AMD5]

(148) Prior to construction of Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, the certificate holder shall provide to the Department:

(a) Information that identifies the as-built locations of all Vansycle II wind turbines.

(b) The maximum sound power level for the existing Vansycle II substation transformers and the maximum sound power level and octave band data for the repowered Vansycle II wind based on manufacturers' warranties or confirmed by other means acceptable to the Department.

(c) The results of noise analysis for the Vansycle II facility modifications, as approved in the Fifth Amended Site Certificate, 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 (including the noise from repowered wind turbines and existing 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.
[AMD5]

XI. 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.

XII. 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. In the event of a conflict between the conditions contained in the amended site certificate and the Council's final order or the Final Orders on Amendment #1, #2, #3, #4, or #5, the conditions contained in this amended site certificate shall control. [Amendment #1; Amendment #5]

XIII. 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.

XIV. EXECUTION

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 representatives of the certificate holders. [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, by FPL Energy Vansycle LLC and by FPL Energy Stateline III, Inc.

ENERGY FACILITY SITING COUNCIL

By: _____
Barry Beyeler, Chair
Oregon Energy Facility Siting Council

Date: MAY 17, 2019

FPL ENERGY VANSYCLE LLC

By: _____

Print: Terrell K. Crews II
Vice President

Date: 6-12-19

FPL ENERGY STATELINE II, INC.

By: _____

Print: Terrell K. Crews II
Vice President

Date: 6-12-19

Attachment B: Reviewing Agency Comments on preliminary RFA5

Stateline Wind Project preliminary Request for Amendment 5 – Reviewing Agency Comment Index			
Date Comment Received	**Commenter Identification**		
	Last Name	**First Name**	**Organization**
Reviewing Agency Comments			
07/10/2018	Hesse	Todd	Oregon Department of Environmental Quality
07/17/2018; 11/14/2018	Wang	Yumei	Oregon Department of Geology and Mineral Industries
07/18/2018	Farrow Ferman	Teara	Confederated Tribes of Umatilla Indian Reservation
08/01/2018	Caines	Jeff	Oregon Department of Aviation
08/09/2018	Rimbach	Greg	Oregon Department of Fish and Wildlife
08/16/2018; 08/24/2018	Pouley	John	Oregon State Historic Preservation Office
Special Advisory Group			
08/01/2018	Murdock	George	Umatilla County Board of Commissioners

From: HESSE Todd
Sent: Tuesday, July 10, 2018 4:38 PM
To: GAO Yuan * ODOE
Cc: RAY Jackie; ESTERSON Sarah * ODOE
Subject: RE: Stateline 3 Wind Project Request for Amendment 5 - Request for ODEQ Review/Comments

Yuan,

I have reviewed the Erosion and Sediment Control Plan. The ESCP will need a little more information, but there isn't anything that would preclude approval of the ESCP. As far as the timing of permit approval, it is my opinion that ODEQ would be able to issue the permit in 30 days or less (I believe DEQ requests 30 days to process applications) once all required materials are received with the required signatures. That is my opinion, I recommend soliciting input from Jackie Ray, DEQ Water Quality Permit Coordinator, regarding confirmation of the timing to issue a permit.

Please let me know if there's anything else I may do to assist.

Todd Hesse, P.E.
CWSRF Engineer
DEQ - Eastern Region
475 NE Bellevue Dr Suite 110
Bend, OR 97701
541-633-2026

From: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Sent: Friday, July 06, 2018 4:59 PM
To: HESSE Todd <HESSE.Todd@deq.state.or.us>
Cc: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Subject: Stateline 3 Wind Project Request for Amendment 5 - Request for ODEQ Review/Comments

Hi Todd,

The Oregon Department of Energy received preliminary Request for Amendment 5 (pAMD5) for the Stateline Wind Project Site Certificate (link provided below). The Stateline Wind Project is an operating wind energy facility located in Umatilla County, consists of two units. Stateline 1 &2 is composed of 186 turbines and has a peak generating capacity of up to 123 megawatts. Stateline 3 consists of 43 turbines with a peak generating capacity of 99 megawatts.

The pRFA5 requests Council approval for the following modifications specific to the Stateline 3 facility: change of facility name; re-powering of existing wind turbines (i.e. replacement of existing nacelles and turbine blades that would increase total turbine height from 416 to 440 feet); temporary disturbances of previously approved temporary laydown areas and access roads (increase road width from 16-foot to 39 feet); and amendment of two site certificate conditions (Condition 37 and 126).

The amendment request can be downloaded from the ODOE website at:

https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx

The certificate holder stated in the pAMD5 that a new 1200-C application has been submitted to ODEQ with this application. We would like to request ODEQ review on the Erosion and Sediment Control Plan submitted with NPDES 1200-C permit, and confirm the timing of the permit approval.

Please let me know if you have any questions or concerns.

Thank you,

Yuan Gao
Siting Analyst, Siting Division
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
P: (503)-373-1033
yuan.gao@oregon.gov
Oregon.gov/energy

Leading Oregon to a safe, clean, and sustainable energy future.

Oregon
Kate Brown, Governor

Department of Geology and Mineral Industries
Administrative Offices
800 NE Oregon St., Suite 965
Portland, OR 97232-2162
(971) 673-1555
Fax: (971) 673-1562
www.oregongeology.org

July 17, 2018

Sarah Esterson
Oregon Department of Energy
Siting Division
550 Capitol St NE, 1st floor
Salem, OR 97301

Re: Completeness Review of the Stateline Wind Project pRFA5, Umatilla County, Oregon

Dear Ms. Esterson,

The Oregon Department of Geology and Mineral Industries (DOGAMI) performed a completeness review of Exhibit H Geologic and Soil Stability for the Stateline Wind Project – Vansycle II, for preliminary request for amendment 5 (pRFA5), Umatilla County, Oregon, dated June 2018.

The bases for the completeness review were a) professional standard-of-practice for characterization of geotechnical hazards and b) relevant guidelines in state and federal statutes.

Specific rules and standards referenced in the completeness of the pRFA5 include:

1) Energy Facility Siting Council (EFSC) Structural Standard OAR 345-022-0020
2) EFSC Contents of the Application OAR 345-021-0010(1)(h)

DOGAMI finds the information submitted by the Applicant to be incomplete, and has requested additional information relating to geologic hazards and disaster resilience, including improvements to the emergency action plan. Specific comments are included on the attached table.

Furthermore, DOGAMI should be provided site-specific geotechnical investigation reports that are completed prior to construction. When site-specific geotechnical investigations are completed, the Applicant should integrate all new pertinent information into the analyses and design, such as seismic hazard analyses. Based on the results of any future investigations, DOGAMI reserves the right to comment on the results with respect to public safety issues pertaining to potential site geologic hazards.

It is the responsibility of the Applicant to ensure that those preparing geologic hazard, geotechnical, and seismic hazard reports in the State of Oregon meet all appropriate requirements.

Thank you for the opportunity to assist with this project. If you have any questions, please contact me at 971-673-1551 (or yumei.wang@oregon.gov).

Sincerely,

Yumei Wang

Yumei Wang
Geotechnical Engineer

cc: Brad Avy, DOGAMI Director
Jason McClaughry, Geohazards Section Leader
Jed Roberts, GS&S Manager

Stateline Wind Power Facility Comments on the June 2018 Exhibit H By Oregon Department of Geology and Mineral Industries (DOGAMI)			
Report Page	**Section No.**	**Pg. / Para. / Sentence Reference (as needed)**	**Comment**
1	2	The current foundations have sufficient capacity to support the incremental increase in weight associated with the repowered turbine.	Please provide clear evidence that justifies this statement. For example, provide engineering analyses indicating that the current foundations have an adequate factor of safety for the standard modes of failure relating to bearing capacity. Please include relevant seismic factors of safety. Provide all data, method, assumptions, results and discussion. Also, please quantify "incremental increase." What is the original weight, and what is the increased weight?
2	3	Ms. Wang confirmed that based on the Certificate Holder's proposed changes to the Facility, no additional geotechnical or geologic hazards analyses would be required	This statement is not accurate. Based on the March 2018 consultation with DOGAMI, DOGAMI wrote, "As you have described it, I don't anticipate that any geotechnical or geologic hazards analyses would be required." During the March 2018 consultation with DOGAMI, the increased weight of the proposed "repowered turbine" was not conveyed. The proposed loading conditions on the existing foundation can lower the factors of safety relating to the bearing capacity. The proposed new conditions should be re-evaluated by a qualified engineer using current code requirements (e.g., OSSC 2014, ASCE 7) and relevant state-of-practice methods (e.g., methods by the American Wind Energy Association). The data, methods, assumptions, results and a discussion should be included. Geotechnical reports should conform to the most recent Oregon State Board of Geologist Examiners geologic report guidelines.

2	4	Correspondence with DOGAMI indicated that no new site-specific geotechnical investigations are necessary, per Section 3.	This statement is not accurate. Based on the March 2018 consultation with DOGAMI, DOGAMI wrote, "As you have described it, I don't anticipate that any geotechnical or geologic hazards analyses would be required." Information contained in Exhibit H indicate new increased loading conditions.
4	7	The Facility is generally unmanned and located in sparsely populated areas; therefore, the risks to human safety or impact due to a disaster are minimal.	The State of Oregon, including the Energy Facility Siting Council and Oregon Department of Energy (ODOE), has shifted beyond designing to reduce risks limited to human safety (i.e. life safety), and now requires designing that integrates disaster resilience [see OAR 345-021-0010(1)(h)(F)(i) and Oregon Resilience Plan at: https://www.oregon.gov/gov/policy/orr/pages/index.aspx]. Similarly, the engineering field is largely moving beyond designing to reduce risks to human safety, and moving towards performance based engineering and resilience. As an example, in Chile, their newest proposed code on wind turbines would require recovery of operations within about two weeks after a design earthquake. What is the anticipated time for operations to resume after a design basis earthquake (DBE) or maximum considered earthquake (MCE)?
NA	Attachment H-2. Vansycle I-II & Stateline Emergency Action Plan. Appendix 1	Natural emergencies considered in this procedure are associated with weather disturbances such as tornadoes, flooding, hurricanes, blizzards, high wind conditions, earthquakes, and severe thunderstorms	The Emergency Action Plan considers earthquakes to be associated with weather disturbances, as indicated by their sentence (in box to the left), and by listing earthquakes in under "5. Severe Weather Preparatory Checklist." This is incorrect; earthquakes are not weather disturbances. DOGAMI recommends that the Applicant improve the Emergency Action Plan so that it accurately characterizes earthquakes and any needed actions.
NA	Attachment H-2. Vansycle I-II & Stateline Emergency Action Plan.	NA	Does the facility have emergency generators or back up power? During power outages, what equipment and safety provisions are on emergency power? For example, are there emergency lights on the tops of the turbine towers?

ESTERSON Sarah * ODOE

From: WANG Yumei * DGMI
Sent: Wednesday, November 14, 2018 4:15 PM
To: ESTERSON Sarah * ODOE
Cc: WANG Yumei * DGMI
Subject: EFSC stateline vansycle RFA5 dogami notes

Hi Sarah,,

I reviewed the August 2018 Barr foundation adequacy report, and they concluded "that the foundations are adequate to support the modified turbines with the understanding that periodic above grade inspections will be performed." (see page 1 of exec summ).

The Barr report recommendations (on page 13) state "Barr's recommendation is that the foundations are adequate to support the modified turbines with the understanding that periodic above grade inspections will be performed. If signs of distressed are observed the recommendations may include further condition assessment or a structural retrofit."

As you and I discussed, the Applicant can either 1) retrofit the existing foundations now, which would be proactive to mitigate the deficiency (see top of page 10 "the top reinforcing was found to be overstressed at the cutoff locations for the Vansycle II foundations by 9%") or 2) conduct periodic inspections and provide annual reports of the condition to ODOE/EFSC.

The Barr recommendations (on page 13 last paragraph) further discusses the "tension in the anchor bolts." If you want, you can also request that the annual reports include information on their "tension checks." I don't think this is needed but I'm offering it up as a possible option.

Yumei

Yumei Wang, P.E. | Resilience Engineer
Oregon Department of Geology and Mineral Industries (DOGAMI)
800 NE Oregon Street, Suite 965, Portland, Oregon 97232
Office: (971) 673-1551 | Mobile: (503) 913-5749
yumei.wang@oregon.gov | www.oregongeology.org

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ESTERSON Sarah * ODOE

From: CAINES Jeff <Jeff.CAINES@aviation.state.or.us>
Sent: Wednesday, August 1, 2018 10:25 PM
To: GAO Yuan * ODOE
Subject: Re: Stateline 3 Wind Project Request for Amendment 5 - Request for ODA Review/Comments by August 3rd

If you need a comment you can use the letter I sent to Sarah Esterson. That talks about a FAA7460-1.

On: 01 August 2018 14:27, "GAO Yuan * ODOE" <Yuan.Gao@oregon.gov> wrote:

Hi Jeff, just resending this email. Please let me know if you could provide any comment on the project by the end of this week.

Thanks,

Yuan

From: GAO Yuan * ODOE
Sent: Tuesday, July 24, 2018 3:31 PM
To: 'jeff.caines@aviation.state.or.us' <jeff.caines@aviation.state.or.us>
Cc: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Subject: Stateline 3 Wind Project Request for Amendment 5 - Request for ODA Review/Comments by August 3rd

Jeff,

The Oregon Department of Energy received preliminary Request for Amendment 5 (pAMD5) for the Stateline Wind Project Site Certificate (link provided below). The Stateline Wind Project is an operating wind energy facility located in Umatilla County, consists of two units. Stateline 1 &2 is composed of 186 turbines and has a peak generating capacity of up to 123 megawatts. Stateline 3 consists of 43 turbines with a peak generating capacity of 99 megawatts.

The pRFA5 requests Council approval for the following modifications specific to the Stateline 3 facility: change of facility name; re-powering of existing wind turbines (i.e. replacement of existing nacelles and turbine blades that **would increase total turbine height from 416 to 440 feet**); temporary disturbances of previously approved temporary laydown areas and access roads (increase road width from 16-foot to 39 feet); and amendment of two site certificate conditions (Condition 37 and 126).

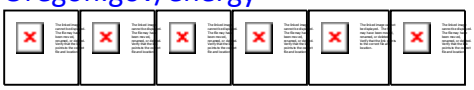
The amendment request can be downloaded from the ODOE website at: https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx

We would like to request ODA's comment on the amendment request by **August 3rd, 2018.** In particular, our data shows there is an adjacent private airport King's (FAA ID 9OR4), which is about 5 miles away from the site boundary. Please include in your comment if the increase of turbine tip height would bring any significant impact/concern to the adjacent airports.

Please let me know if you have any question.

Thank you,

Yuan Gao
Siting Analyst, Siting Division
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
P: (503)-373-1033
yuan.gao@oregon.gov
Oregon.gov/energy



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OREGON DEPARTMENT OF AVIATION

3040 25th Street, SE
Salem, OR 97302-1125
Phone: (503) 378-4880
Toll Free: (800) 874-0102
FAX: (503) 373-1688

ODA email provides reference to relevant FAA7460 process - as provided in comment letter provided on Golden Hills Wind Project

May 31, 2016

Maxwell Woods
Energy Facility Siting Analyst
Oregon Department of Energy
625 Marion Street NE
Salem, OR 97301

SUBJECT: Golden Hills Wind Project – Amendment #3 Supplement

The Oregon Department of Aviation (ODA) has received the Amendment #3 Supplemental Information for the Golden Hills Wind Farm LLC application. ODA has prepared the following background information and comments that we request to be included in the Final Order, as prepared by the Oregon Department of Energy and adopted by the Energy Facility Siting Council (EFSC).

The Siting Council adopted conditions that required the certificate holder to submit to both the FAA and ODA, a Notice of Proposed Construction and Alteration (FAA form 7460-1) once the final location of the wind turbines are identified. ODA requests that this condition of approval remain as part of the updated final order.

In addition, it should be noted that in a detail review of the submitted material, Figure 3 (REVISED) and Figure 4 (REVISED) identified a "Worst-case Total Turbine Height of 158 meters (518 feet)". In accordance with ORS 836.530, the Department has adopted rules for Physical Hazards to Air Navigation (OAR 738-070). Specifically *OAR 738-070-0110(1)(a)* identifies any future object would be an obstruction to air navigation if it is over 500 feet above ground level at the site of the object. As stated above, the REVISED figures show the turbines above 500 feet. As a result by rule, these objects are automatically classified as "Obstructions".

To determine if these proposed turbines constitute a hazard while being consistent with Federal Aviation Administrative Advisory Circulars *(FAA – AC 70/7461-1L – Obstruction Marking and Lighting)* ODA recommends an airspace study and analysis of the overall project. This study would incorporate any potential impact to airport operations in and around Wasco State Airport as well as aircraft flying in proximity to the study area.

If the study determines the wind turbines not to be a hazard to air navigation, the project will still have to be marked and light in accordance with *FAA AC 70/7461-1L*.

Finally, ODA requests that all other current and updated ODA and FAA rules, standards and regulation are met at the time of the aeronautical study and that FAA form 7460-1 are submitted prior to construction of the project. This is important to state that Wasco State Airport is under Federal grant assurances and obligations, specifically:

Grant Assurance #20 Hazard Removal and Mitigation. The (airport sponsor) will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

Grant Assurance # 21 – Compatible Land Use The (airport sponsor) will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

**Please note that ODA and FAA rules, standards and regulations may have changed since the Final Order was issued on May 15, 2009.

Thank you for allowing ODA to comment on this proposed amendment(s) for the Golden Hills Wind Project. Feel free to contact me at (503) 378-2340 if you have any questions.

Sincerely,

Mitch Swecker
Director
Oregon Department of Aviation

Confederated Tribes *of the*
Umatilla Indian Reservation
Department of Natural Resources
46411 Timine Way, Pendleton, Oregon 97801

MEMORANDUM

To: Yuan Gao, Siting Analyst, Siting Division
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
Sent via email to: yuan.gao@oregon.gov

From: Teara Farrow Ferman, Department of Natural Resources Interim Director *Teara Farrow Ferman*
Confederated Tribes of the Umatilla Indian Reservation
46411 Timine Way, Pendleton, OR 97801
TearaFarrowFerman@ctuir.org
541-276-3447

Date: July 18, 2018

RE: Confederated Tribes of the Umatilla Indian Reservation's Comments on the Stateline 3 Wind Project Request for Amendment 5

General Comments:
Thank you for contacting the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) regarding the Stateline 3 Wind Project Request for Amendment 5. The CTUIR offers the following comments with the project.

The CTUIR reviewed the Stateline 3 Wind Project Request for Amendment 5 and it is our determination the purposed project will not affect known archaeological sites. It is our understanding that the company wants to re-power existing wind turbines, which means, replacement of existing nacelles and turbine blades that would increase total turbine height from 416 to 440 feet. There will be no new digging and laydown yards will be the same areas used previously during past construction. With these understanding, the CTUIR would recommend that no cultural resources monitoring would be required and the CTUIR would have no cultural resource concerns with the project as presented. However, if project plans changes, the CTUIR comments and recommendations may change.

ESTERSON Sarah * ODOE

From: Gregory Rimbach <Gregory.P.Rimbach@state.or.us>
Sent: Thursday, August 9, 2018 8:38 AM
To: GAO Yuan * ODOE
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Yuan:

Yes, I am aware of it. The only reason why is that Matt Cambier off Tetra Tech notified me of this in May of this year. I will forward you a few emails that I received from him regarding this habitat change.

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Wednesday, August 08, 2018 4:43 PM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Cc: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>; REIF Sarah J <Sarah.J.Reif@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hey Greg,

Thank you for following up with me. Since the project is relative old and the impact to avian species might already been done, Sarah and I discussed a pre-construction (birds/bats) monitoring might not be needed. We were thinking a post-construction monitoring might be necessary to understand if the proposed amendment will bring any population-level impact to the birds and bats species.

I do have a question for you. In RFA5, the certificate holder states that there is an area previously identified Category 3 Conservation Reserve Program (CRP) area is currently a cultivated cropland(Category 6). Are you aware of this habitat transform? Please see attached map.

Thanks,
Yuan

From: Gregory Rimbach [mailto:Gregory.P.Rimbach@state.or.us]
Sent: Wednesday, August 08, 2018 2:14 PM
To: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hello Yuan:

I had a chance to talk with Sara Reif earlier today, and she had mentioned that you and her had spent some time together discussing Stateline 3 pre and post construction wildlife monitoring issues. Certainly I wanted to get back to you but am wondering if you had all your questions answered? If not, let me know and we can discuss.

Thanks Yuan.

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Friday, July 27, 2018 4:21 PM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Cc: REIF Sarah J <Sarah.J.Reif@state.or.us>; ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hi Greg, I searched around in their Exhibit P trying to understand what has been done for Stateline 3. There is this 2008 biological survey, I summarized the survey results in the document attached. I also put together all conditions related to Fish & Wildlife Standard for Stateline 3 Project, it is in the same document. I also attached their Wildlife Monitoring and Mitigation Plan. Let's discuss when you come back from the vacation. Hope you have a wonderful one!

Best,
Yuan

From: Gregory Rimbach [mailto:Gregory.P.Rimbach@state.or.us]
Sent: Thursday, July 26, 2018 4:56 PM
To: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Cc: REIF Sarah J <Sarah.J.Reif@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Yuan:

In our earlier discussion today I had made a comment about bat acoustic monitoring and that it was discussed with Matt at Tetra Tech. I went back and reviewed previous internal emails, and Sara Reif was instead recommending an updated round of bird/bat fatality monitoring pre-construction, and then another year of fatality monitoring post-construction. The idea behind this is to address the unknown impacts to wildlife with the longer turbine blades.

Greg Rimbach
Umatilla District Wildlife Biologist

Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Wednesday, July 25, 2018 2:46 PM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Greg,

Thank you for your responses. I would like to schedule a phone call with you tomorrow to walk-through the project and discuss other remaining questions. Would tomorrow 7/26 11am works for you?

From: Gregory Rimbach [mailto:Gregory.P.Rimbach@state.or.us]
Sent: Wednesday, July 25, 2018 11:42 AM
To: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Yuan:

Apologies for not commenting by July 20, but I now have had time to review your 4 questions regarding the Stateline 3 Wind project. I have copied your original questions from your July 6, 2018 email below for reference and have answered them in red text.

We would like to request ODFW review and comment on the amendment request by **July 20, 2018.** In particular, we have the following questions:

- Does ODFW agree with the habitat categorization and acres of habitat type in Table P-1 and P-2? The Habitat Categorization in Table P-1 is correct and the Examples of ODFW Habitat Categorization within the Analysis Area appear to be appropriate as well. The acres of habitat type within the analysis area and proposed temporary disturbance areas in Table P-2 appear to be correct, however I do not have the ability to corroborate these acres for accuracy. Earlier this year Matt Cambier of Tetra Tech notified me that some of the CRP acreage within the project site had been converted to agriculture and I do not know if Table P-2 reflects this change. Other than that, I would agree with Table P-1 and P-2.
- Does ODFW consider the areas surveyed for WGS in 2018 to be sufficient? Yes. I had several conversations with Matt Cambier earlier this year on this very issue and ODFW was comfortable with the final survey area identified.
- Does ODFW still consider the Revegetation Procedures in Attachment P-4 Revegetation Plan to be sufficient? Yes
- Has the certificate holder already successfully restored the temporary disturbed site post the construction of Stateline 3? Again, Matt mentioned that it had been successfully restored but I have not conducted a site visit. Typically I do not do a site visit unless there is extenuating circumstances to do so.

I should be around the office frequently until this Friday if you have questions, but will be on vacation all next week.

Thanks Yuan

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Thursday, July 19, 2018 11:16 AM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hey Greg, I just want to follow up with you about the Stateline 3 Amendment 5 project. Would you be available to discuss over the phone sometime this afternoon?

Yuan

From: Gregory Rimbach [mailto:Gregory.P.Rimbach@state.or.us]
Sent: Thursday, July 12, 2018 5:01 PM
To: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Thanks. Talk with you soon.

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Thursday, July 12, 2018 4:58 PM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Greg,

Yes, it is in the document but the way they organized the document is really confusing. Here, I attached Attachment P-3 and P-4 for you to review. Let me know if you need anything else.

Thanks,

From: Gregory Rimbach [mailto:Gregory.P.Rimbach@state.or.us]
Sent: Thursday, July 12, 2018 4:50 PM
To: GAO Yuan * ODOE <Yuan.Gao@oregon.gov>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Yuan:

Was looking through the Preliminary request for amendment 5 (pRFA) Exhibit K-P, Section Exhibit P, page 3, and I was unable to find Attachments 3 or 4. Are they elsewhere in this document? I will contact you soon regarding your 4th bulleted item. Thanks Yuan.

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Wednesday, July 11, 2018 2:04 PM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>
Cc: REIF Sarah J <Sarah.J.Reif@state.or.us>
Subject: FW: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hi Greg,

I am reaching out to see if you have any questions on the Stateline project or EFSC process. I understand that pRFA5 Exhibit P and Q are tremendous, please let me know if you need any additional time. You can find the document on our website at: https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx. Also, I am happy to set up a phone call with you to discuss the project once you developed some initial thoughts.

Thanks,

Yuan

From: Steve Cherry [mailto:Steve.P.Cherry@state.or.us]
Sent: Wednesday, July 11, 2018 8:11 AM
To: RIMBACH Gregory P <Gregory.P.Rimbach@state.or.us>; CHERRY Steve P <Steve.P.Cherry@state.or.us>; GAO Yuan * ODOE <Yuan.Gao@oregon.gov>

Cc: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>; REIF Sarah J <Sarah.J.Reif@state.or.us>
Subject: RE: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Yuan,
The Stateline project is in Umatilla County and is in Greg Rimbach's district. I have cc'd him on this email so you coordinate directly with him. Thanks

Steve

From: GAO Yuan * ODOE [mailto:Yuan.Gao@oregon.gov]
Sent: Friday, July 06, 2018 5:03 PM
To: CHERRY Steve P
Cc: ESTERSON Sarah * ODOE; REIF Sarah J
Subject: Stateline 3 Wind Project, Request for Amendment 5 - Request for ODFW Review/Comments by July 20

Hi Steve,

The Oregon Department of Energy received preliminary Request for Amendment 5 (pAMD5) for the Stateline Wind Project Site Certificate (link provided below). The Stateline Wind Project is an operating wind energy facility located in Umatilla County, consists of two units. Stateline 1 &2 is composed of 186 turbines and has a peak generating capacity of up to 123 megawatts. Stateline 3 consists of 43 turbines with a peak generating capacity of 99 megawatts.

The pRFA5 requests Council approval for the following modifications specific to the Stateline 3 facility: change of facility name; re-powering of existing wind turbines (i.e. replacement of existing nacelles and turbine blades that would increase total turbine height from 416 to 440 feet); temporary disturbances of previously approved temporary laydown areas and access roads (increase road width from 16-foot to 39 feet); and amendment of two site certificate conditions (Condition 37 and 126).

The amendment request can be downloaded from the ODOE website at: https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx

We would like to request ODFW review and comment on the amendment request by **July 20, 2018.** In particular, we have the following questions:

- Does ODFW agree with the habitat categorization and acres of habitat type in Table P-1 and P-2?
- Does ODFW consider the areas surveyed for WGS in 2018 to be sufficient?
- Does ODFW still consider the Revegetation Procedures in Attachment P-4 Revegetation Plan to be sufficient?
- Has the certificate holder already successfully restored the temporary disturbed site post the construction of Stateline 3?

Please let me know if you have any questions or concerns.

Thank you,

Yuan Gao
Siting Analyst, Siting Division
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
P: (503)-373-1033
yuan.gao@oregon.gov
Oregon.gov/energy

Leading Oregon to a safe, clean, and sustainable energy future.

ESTERSON Sarah * ODOE

From: POULEY John * OPRD
Sent: Thursday, August 16, 2018 12:23 PM
To: Mike.Pappalardo@nexteraenergy.com
Cc: ESTERSON Sarah * ODOE
Subject: SHPO Case Nbr SHPO Case No.: 10-1059, Stateline Vansycle II Wind Proj
Attachments: SHPO Response Letter Case Nbr SHPO Case No._ 10-1059.pdf

Please find the SHPO's response to your request for comment on cultural resources at the above-identified project. This attachment serves as your file copy. If you have any questions, please feel free to contact me.

John Pouley
Assistant State Archaeologist
Oregon SHPO
503-986-0675

Oregon
Kate Brown, Governor

Parks and Recreation Department
State Historic Preservation Office
725 Summer St NE Ste C
Salem, OR 97301-1266
Phone (503) 986-0690
Fax (503) 986-0793
www.oregonheritage.org

August 16, 2018

Mr. Mike Pappalardo
NextEra Energy Resources, LLC
3256 Wintercreek Drive
Eugene, OR 97405

RE: SHPO Case No. 10-1059
Stateline Vansycle II Wind Proj
Final monitoring report
Multiple legals, Umatilla County

Dear Mr. Pappalardo:

Our office recently received Exhibit S for the project referenced above. In the cover letter, Oregon Department of Energy requests Oregon SHPO to comment on two questions. Our answers are as follows:

Does SHPO concur that the construction and operation of the RFA5, taking into account mitigation, are not likely to result in significant adverse impacts to site 35UM343? Answer: Our office concurs with the no adverse effect determination.

Does SHPO believe that the desktop survey is sufficient to identify and assess the significance of resources within the analysis area. Answer: No. Our office recommends a survey, by qualified professionals, of the amended Exhibit S areas.

Under state law (ORS 358.905-955 & ORS 97.740) archaeological sites, objects and human remains are protected on both public and private land in Oregon. If project impacts and the degree/type of required ground disturbance changes from that outlined in your report, further consultation with our office will be required before proceeding with the proposed activity. If you have any questions regarding any future discovery, or this letter, feel free to contact our office.

Sincerely,

John D. Pouley

John Pouley, M.A., RPA
Assistant State Archaeologist
(503) 986-0675
john.pouley@oregon.gov

cc: Sarah Esterson, OR Dept of Energy

ESTERSON Sarah * ODOE

From: POULEY John * OPRD
Sent: Friday, August 24, 2018 2:20 PM
To: ESTERSON Sarah * ODOE
Subject: RE: SHPO Case Nbr SHPO Case No.: 10-1059, Stateline Vansycle II Wind Proj

Thanks Sarah,

I apologize for not getting to this sooner, but I have been out sick for the past two days. In any event, I am happy with providing a more detailed letter, and, even potentially changing my previous response. However, I do have some concerns, which I hope you can help me with.

1) In the CTUIR letter, they specifically reference that their assumption is that "there will be no new digging...". In the Cover letter from ODOE, the second paragraph states: "increase road width from 16-foot to 39 feet); and amendment of two site certificate conditions (Condition 37 and 126)."

It is the increase in road width that I have concerns with, and I believe, given how Exhibit S is written, that CTUIR may not have noticed this level of disturbance (for example, CTUIR reference the work to be done as operating turbines to be upgraded by replacing nacelles and blades on existing towers, and that there would be "no new digging...").

The introductory paragraph in Exhibit S does not mention any new digging or ground disturbance. However, on page 3, it states that "portions of the potential disturbance were found to extend beyond previously surveyed areas..." "These areas are primarily along existing access roads".

Based on the above, it appears that there is new ground disturbance, and that the CTUIR based their response on the belief that there would not be any.

2) Under Section 4.2 (second paragraph), it states "additional unidentified cultural resources or areas with increased potential for subsurface deposits may exist in the study area. Disturbance of cultural resources in these areas could result in significant impacts." However, later, in Section 7.0, it states that with recommended mitigation measures in place (monitoring), the Facility will have no significant impact on historic, cultural, and archaeological resources, and that EFSC's standard for historic, cultural, and archaeological resource protection has been met".

The applicant is stating, correctly, that there is a potential for subsurface deposits, but they suggest monitoring will mitigate significant impacts. As I stated during our meeting on Tuesday, all monitoring does is identify cultural deposits as they are being impacted.

Apologize for the long email, but there are still some concerns (especially if there is new ground disturbance, which the CTUIR would be concerned about).

I can send a new letter on Monday, but I wanted to let you know my thoughts ahead of time.

Hope all is well,
-John

John Pouley
Assistant State Archaeologist
Oregon SHPO

503-986-0675

-----Original Message-----
From: ESTERSON Sarah * ODOE
Sent: Tuesday, August 21, 2018 3:17 PM
To: POULEY John * OPRD
Subject: RE: SHPO Case Nbr SHPO Case No.: 10-1059, Stateline Vansycle II Wind Proj

John,

For reference, attached is the comment letter received from CTUIR on the Stateline Wind Project, Request for Amendment 5.

In the amendment materials, the certificate holder explains that the temporary access roads and laydown areas would be located entirely within areas previously disturbed during 2009 construction activities, all of which were surveyed with the exception of small portions of potential disturbance areas identified as extending beyond 2009 surveyed areas, represented in Figure S-2.

Let me know if you have any questions about current land use within the potential disturbance areas, or need any additional information to support your review.

Thanks,
Sarah

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol St NE, 1st Floor
Salem, OR 97301
P:(503) 373-7945
C: (503) 385-6128

Oregon.gov/energy

-----Original Message-----
From: POULEY John * OPRD
Sent: Thursday, August 16, 2018 12:23 PM
To: Mike.Pappalardo@nexteraenergy.com
Cc: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Subject: SHPO Case Nbr SHPO Case No.: 10-1059, Stateline Vansycle II Wind Proj

Please find the SHPO's response to your request for comment on cultural resources at the above-identified project. This attachment serves as your file copy. If you have any questions, please feel free to contact me.

John Pouley

Assistant State Archaeologist
Oregon SHPO
503-986-0675

Umatilla County
Board of County Commissioners

August 1, 2018

Oregon Department of Energy
Attn: Mr. Yuan Gao and Ms. Sarah Esterson
550 Capital Steet NE
Salem, OR 97301

Subject: Stateline III Wind Energy Facility
Response to Preliminary Request for Amendment 5

Dear Mr. Gao and Ms. Esterson:

Umatilla County has completed a review of Stateline III Wind Energy Facility - Preliminary Request for Amendment (pRFA) 5, Exhibit K (Land Use). A summary of comments from the review is included below:

1. County has no objections to the proposed name change from "Stateline III" to "Vansycle II."

2. UCDC Section 152.627 includes provisions for a variance. We understand the applicant is requesting a variance to provide relief from the county road right-of-way setback requirements found in UCDC Section 152.616(HHH)(6)(a)(4). A variance is a device which grants a property owner relief from certain provisions of the code when, because of the *particular physical surroundings, shape, or topographical conditions of the property*, compliance would result in a particular hardship upon the owner, as distinguished from a mere inconvenience or a desire to make more money. Typically, a variance cannot be requested to provide relief from circumstances created by the owner/developer of a property, or situations that are "self-created." Therefore, after consulting with our legal counsel, County does not believe there are circumstances present that warrant an application for a variance.

Thank you for your attention to our comments and requirements. Any additional questions may be directed to Robert Waldher, Planning Director, Umatilla County Planning, 216 S. E. 4th Street, Pendleton, Oregon 97801; phone (541) 278-6251 or e-mail at robert.waldher@umatillacounty.net.

Sincerely,

George Murdock

George Murdock
Chairman

Attachment C: Draft Proposed Order Comments/Index

Attachment C: Draft Proposed Order Comments/Index			
Commenter Name	**Entity/Organization**	**Date Comment Received**	**Location in Proposed Order where Comment is Addressed**
Teara Farrow Ferman	Confederated Tribes of the Umatilla Indian Reservation	4/29/19	III.K. Historic, Cultural and Archeological Resources
Jesse Marshall	FPL Energy Stateline II, Inc. (Certificate Holder)	4/26/19	III.Q.1. Noise Control Regulation
Chris Carpenter	Oregon & Southern Idaho District Council of Laborers	4/29/19	II.D. Council Review Process
Cindy Severe	Member of the Public	4/15/19	III.Q.1. Noise Control Regulation
Greg Rimbach	Oregon Department of Fish and Wildlife	4/29/19	III.H. Fish and Wildlife Habitat
Robert Waldher	Umatilla County Department of Land Use Planning	4/26/19	III.E. Land Use
Christian Nauer	Confederated Tribes of the Warms Springs Reservation of Oregon	4/08/19	III.K. Historic, Cultural and Archeological Resources

Confederated Tribes *of the*
Umatilla Indian Reservation
Department of Natural Resources
46411 Timíne Way, Pendleton, Oregon 97801

MEMORANDUM

To: Sarah Esterson, Senior Siting Analyst
Oregon Department of Energy
550 Capitol Street N.E., 1st Floor
Salem, OR 97301
Sent via email to: sarah.esterson@oregon.gov

From: Teara Farrow Ferman, Cultural Resources Protection Program Manager Teara Farrow Ferman
Confederated Tribes of the Umatilla Indian Reservation
46411 Timine Way, Pendleton, OR 97801
TearaFarrowFerman@ctuir.org
541-276-3447

Date: April 29, 2019

RE: Confederated Tribes of the Umatilla Indian Reservation's Comments on the Stateline Wind Project Complete Request for Amendment 5 and Draft Proposed Order

General Comments:
Thank you for contacting the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) regarding the Stateline Wind Project Complete Request for Amendment 5 and Draft Proposed Order. The CTUIR offers the following comments with the project.

The CTUIR does not have any concerns with the project name being changed from Stateline 3 to Vansycle II, the repowering of 43 existing wind turbines, and the removal and replacement of nacelles and rotors. The CTUIR understands that there will be no new digging associated with the activities listed above and the laydown yards will be the same areas used previously during past construction which the CTUIR provided monitoring services for. The CTUIR would recommend that no cultural resources monitoring would be required for these portions of the project. However, the CTUIR understands there will be some roads being widened and the construction of temporary access roads, some of which will be in areas that were not previously surveyed or monitored. The CTUIR would recommend a cultural resources monitor be present during the ground disturbing activities associated with these portions of the project.

ESTERSON Sarah * ODOE

From: Konkol, Carrie <Carrie.Konkol@tetratech.com>
Sent: Monday, April 29, 2019 3:02 PM
To: ESTERSON Sarah * ODOE; Pappalardo, Mike
Cc: Solsby, Anneke; Marshall, Jesse; Sarah Stauffer Curtiss; Castro, Scott; WOODS Maxwell * ODOE; CORNETT Todd * ODOE; ROWE Patrick G
Subject: RE: Stateline Wind Project Request for Amendment 5 - Comments Received to Date
Attachments: Stateline_ RFA5_DPO_Comment_Responses_04_25_2019.pdf

Sarah,

Thank you for forwarding all of the Stateline DPO RFA5 comments for our review and consideration.

Attached is a letter prepared by NextEra (on behalf of Wheatridge Wind Energy, LLC) with respect to certain topics of concern identified in the DPO RFA5 comment letter from Cindy Severe to ODOE, dated April 15, 2019.

Please contact us with any questions.
Thank you,

Carrie

Carrie Konkol | **Senior Project Manager**
Carrie.Konkol@tetratech.com

Tetra Tech | **Portland**
1750 SW Harbor Way, Suite 400 | Portland, OR 97201
Direct: 503.721.7225 | Fax: 503.227.1287 | Cell: 503.830.8587

From: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Sent: Monday, April 29, 2019 10:31 AM
To: Pappalardo, Mike <MIKE.PAPPALARDO@nexteraenergy.com>
Cc: Konkol, Carrie <Carrie.Konkol@tetratech.com>; Solsby, Anneke <Anneke.Solsby@tetratech.com>; Marshall, Jesse <JESSE.MARSHALL@nexteraenergy.com>; Sarah Stauffer Curtiss <sarah.curtiss@stoel.com>; Castro, Scott <Scott.Castro@nexteraenergy.com>; WOODS Maxwell * ODOE <Maxwell.Woods@oregon.gov>; CORNETT Todd * ODOE <Todd.Cornett@oregon.gov>; ROWE Patrick G <Patrick.G.ROWE@state.or.us>
Subject: RE: Stateline Wind Project Request for Amendment 5 - Comments Received to Date

Hi all,

An additional comment on the Draft Proposed Order on Request for Amendment 5 of the Stateline Wind Project was received from Umatilla Planning Department on April 26, 2019. Attached for your review and consideration.

Please submit any comments and/or responses to comments by 5 p.m. today (April 29, 2019), the close of the comment period.

Thanks,
Sarah

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol St NE, 1st Floor
Salem, OR 97301
P:(503) 373-7945
C: (503) 385-6128

Oregon.gov/energy

From: ESTERSON Sarah * ODOE
Sent: Monday, April 15, 2019 4:12 PM
To: 'Pappalardo, Mike' <MIKE.PAPPALARDO@nexteraenergy.com>
Cc: Konkol, Carrie <Carrie.Konkol@tetratech.com>; Solsby, Anneke <Anneke.Solsby@tetratech.com>; Marshall, Jesse <JESSE.MARSHALL@nexteraenergy.com>; Sarah Stauffer Curtiss <sarah.curtiss@stoel.com>; Castro, Scott <Scott.Castro@nexteraenergy.com>; WOODS Maxwell * ODOE <Maxwell.Woods@oregon.gov>; CORNETT Todd * ODOE <Todd.Cornett@oregon.gov>; ROWE Patrick G <Patrick.G.ROWE@state.or.us>
Subject: Stateline Wind Project Request for Amendment 5 - Comments Received to Date

Hi all,

We have received two comments to date on the Draft Proposed Order on Request for Amendment 5 of the Stateline Wind Project Site Certificate, from Cindy Severe and Christian Nauer with CTWS.

Please review; if you would like to respond, please respond by April 29.

Thanks,
Sarah

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol St NE, 1st Floor
Salem, OR 97301
P:(503) 373-7945
C: (503) 385-6128

Oregon.gov/energy

From: Pappalardo, Mike [mailto:MIKE.PAPPALARDO@nexteraenergy.com]
Sent: Thursday, March 28, 2019 11:14 AM
To: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Cc: Konkol, Carrie <Carrie.Konkol@tetratech.com>; Solsby, Anneke <Anneke.Solsby@tetratech.com>; Marshall, Jesse <JESSE.MARSHALL@nexteraenergy.com>; Sarah Stauffer Curtiss <sarah.curtiss@stoel.com>; Castro, Scott <Scott.Castro@nexteraenergy.com>
Subject: Re: Stateline Wind Project Request for Amendment 5 - DPO Issuance 3/29/19

Thanks Sarah.
I'm currently scheduled for a hearing in Wyoming, but we will have someone there for sure.

Mike Pappalardo
NextEra Energy Resources
Cell (541) 206-1005
Office (541) 302-1345

On Mar 28, 2019, at 10:42 AM, ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov> wrote:

> CAUTION - EXTERNAL EMAIL
>
> Hi all,
>
> Just checking in – the Draft Proposed Order on Request for Amendment 5 for Stateline Wind Project will be issued on March 29, 2019. We are anticipating Council's review of the Proposed Order/final decision at the May 16-17, 2019 Council meeting, which will be held in Condon, OR.
>
> Let us know if there are questions or comments.
>
> Thanks,
> Sarah
>
> **Sarah T. Esterson**
> Energy Facility Siting Analyst
> Oregon Department of Energy
> 550 Capitol St NE, 1st Floor
> Salem, OR 97301
> P:(503) 373-7945
> C: (503) 385-6128
>
> Oregon.gov/energy
> <image001.jpg>

April 25, 2019

Ms. Sarah Esterson
Siting Analyst
Oregon Department of Energy
550 Capitol St. NE, 1st Floor
Salem, OR 97301

Subject: **Vansycle II/Stateline III Request for Amendment 5 – Response to Comments on Draft Proposed Order**

Dear Ms. Esterson:

NextEra Energy Resources, LLC, on behalf of Wheatridge Wind Energy, LLC (the Certificate Holder), is providing the following clarifications with respect to certain topics of concern identified in the letter from Cindy Severe to the Oregon Department of Energy, dated April 15, 2019.

Re: Changing the name of the Facility from Stateline III to Vansycle II

> *….The wind developer has asked for the name change to be given to the Stateline 3 re-power project as the "Vansycle II". The Stateline 3 amendment was granted under the site certificate of the Stateline wind power facility. Each wind project has different area impacts and site conditions unique to each project. It is also, for the most part, located in an entirely different physical location from the original "Vansycle Ridge Wind Power Facility"…..*

Response: The Certificate Holder is requesting to change the name of Stateline III to Vansycle II for internal operational purposes and because it more accurately reflects the location of that portion of the Stateline Wind Project ("Facility") relative to the Certificate Holder's other wind farms in the area: Stateline III/Vansycle II is adjacent to Vansycle I and Stateline 1 and 2 are further to the north. Although the Stateline III portion of the facility will be renamed, the name of the Facility will remain the Stateline Wind Project and the Stateline Wind Project Site Certificate will continue to govern the Stateline III/Vansycle II portion of the Facility. There will be no locational change to the Facility, and no changes to the Site Boundary for Stateline III/Vansycle II or any other portion of the Facility. The site certificate conditions applicable to the Facility will also remain the same. Therefore, there will be no material changes to how the site certificate and its conditions are applied to the Facility, other than changes to the naming conventions for a portion of the Facility.

Re: Noise Impacts

> *….It was discussed in exhibit X of the amendment#5 of the Stateline project that there will be an increase of noise impacts. It further states that these increases can be mitigated….*
>
> *… The CADNA/A software made by DataKustic is based on the ISO 9613-2 standard. Acousticians hired by the wind industry insist that this is an appropriate method for modeling*

wind turbine sound. However, the software was never validated for wind turbine noise and is a tool to measure industrial noise, construction, other ground based noise sources.

….EFSC with the above facts, this amendment #5 cannot be granted as it is based on incomplete and misleading statements on noise mitigation. OAR 345-027-0060 Request to Amend Certificate….

Response: As shown in Table X-7 of Exhibit X of Request for Amendment 5, the modeling results demonstrate compliance with the Oregon Department of Environmental Quality's 50 A-weighted decibel L_{50} limit at all noise sensitive receptors. Furthermore, Exhibit X states that all noise level increases that do not meet the potential exceedances of the Oregon Administrative Rules' ambient degradation standard are participating landowners. The Certificate Holder will provide required documentation of noise waivers, as necessary, and will submit these to the Oregon Department of Energy evidence as part of pre-construction compliance.

Modeling wind energy facilities using CadnaA, and therefore ISO 9613-2, has proven to be a reliable way to estimate sound emissions from wind turbines. Many technical studies have been conducted that concluded that the ISO 9613-2 methodology is acceptable for predicting wind turbine noise, given that conservative assumptions are applied[1] and the acoustic model is modified to reflect site-specific details. Site-specific details include terrain data, ground absorption characteristics, and wind turbine specifications. Conservative assumptions applied within the model include:

- The ISO 9613-2 standard assumes downwind propagation in all directions; in other words, receptors are assumed to be downwind of all wind turbines regardless of actual wind conditions. It is well understood that sound travels further downwind than upwind; therefore, the ISO 9613-2 standard assumption of downwind propagation in all directions will result in an overestimation of received sound levels at receptors that are not located downwind.
- All wind turbines are operating concurrently at maximum rated power, which is a very unlikely operational condition.
- Meteorological conditions favorable to sound propagation were selected: 10°C and 70% relative humidity.
- A semi-reflective ground absorption coefficient (G=0.5) was used throughout the Project area, with an increasingly more reflective ground absorption coefficient used approaching each turbine location.

[1] Sources: Marshall Day Acoustics. Examination of the Significance of Noise in Relation to Onshore Wind Farms, November 29,2013; Environmental Protection Agency (Ireland). Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3), June 2011; Ministry of Forests, Lands and Natural Resource Operations, Ministry of Energy, Mines, and Natural Gas, Environmental Assessment Office. Best Practice for Wind Power Project Acoustic Assessment, British Columbia, 2012; Institute of Acoustics. A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, May 2013.

- Shielding effects from existing vegetation and anthropogenic structures was ignored.

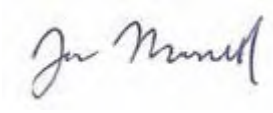
The reliability of CadnaA and the stated acoustic modeling methodology, above, is determined through operational post-construction sound studies to verify model inputs and results. A post-construction sound study was conducted at the Stateline III Wind Project in 2010. The objective of that study was to verify the actual sound power level output of the wind turbines constructed for Stateline III. Measurement results showed background corrected sound pressure levels in the mid 50-decibel range at a distance of 126.5 meters from the wind turbines, which were on average 2 A-weighted decibels lower than sound pressure levels predicted in the pre-construction acoustic modeling analysis. Results also confirmed that the measured sound emissions of the Siemens SWT 2.3 MW wind turbine were within acceptable tolerances of the sound output, as reported in the manufacturer sound specifications and used in the acoustic modeling analysis in support of permitting. The results of the study were submitted and approved by the Oregon Department of Energy and the Energy Facility Siting Council.

The previously completed post-construction sound study at the Project site reinforces the effectiveness of the acoustic modeling approach used to predict potential impacts at receptors. As stated above, the analysis provided in Exhibit X of Request for Amendment 5 successfully demonstrates compliance with all applicable noise regulations, so no noise mitigation is necessary.

Finally, the Department has proposed Condition No. 148 to ensure compliance with the DEQ noise control regulations. Accordingly, there is sufficient evidence in the record for the Council to find that the Facility, as modified by RFA5, would comply with the DEQ noise control regulations.

Thank you for your consideration.

Best regards,



Jesse Marshall
Project Director
NextEra Energy Resources
(760) 846-4421
jesse.marshall@nee.com

ESTERSON Sarah * ODOE

From: Chris Carpenter <ccarpenter@osidcl.org>
Sent: Monday, April 29, 2019 4:08 PM
To: ESTERSON Sarah * ODOE
Subject: Oregon Laborers Testimony - Stateline Wind
Attachments: Stateline-Vansycle Windfarm - Oregon Laborers Testimony April 29 2019.docx

Good Afternoon Ms Esterson

Please find attached the Oregon & Southern Idaho District Council of Laborers comments on the Stateline Wind Amendment 5 request.

Thank you!

Chris

--
Chris Carpenter
Political Director
Oregon & Southern Idaho District Council of Laborers
O: 541.801.2217
C: 503.704.2926
17230 NE Sacramento St., Suite 201
Portland, OR 97230

Oregon & Southern Idaho District Council of Laborers

LiUNA!

Sarah Esterson
Oregon Department of Energy
550 Capitol St. NE
Salem, OR 97301

April 29, 2019

Ms Esterson –

The Oregon & Southern Idaho District Council of Laborers represents about 3,500 working men and women in Oregon. We are writing today with concerns about the permitting process on the Stateline/Vansycle Wind Power facility in Eastern Oregon.

As part of the standard for energy facility permitting, the Energy Facility Siting Council is required to look at the impact on the Community at the site (under 'Energy Facility Siting' in ORS 469.501). It is our belief that as this amendment is considered around the repowering of the 43 existing turbines, and the laydown areas/access roads, a significant part of the Community Impact consideration should include workforce/contracting standards. We urge the Department and EFSC to consider:

1. Wages/benefits and working conditions on the construction/repowering.
2. Use of Oregon's existing workforce, and number of Oregonians working on the project vs out of state workers.
3. Use of Oregon Training and Apprenticeship programs.
4. Use of responsible contractors that takes into account;
    a. Oregon Contractors hired vs out of state contractors.
    b. Wages/actual benefits said contractors provide to workers.

We strongly believe that as projects like this are moved forward, considering the local economic and community impacts should absolutely include the high workforce, contractor, and business practice standards we have come to expect in Oregon.

Thank you for your time and work.

Oregon & Southern Idaho District Council of Laborers

17230 NE Sacramento St. Ste 201

Portland, OR 97230

503.760.2933

ESTERSON Sarah * ODOE

From: severe@wildblue.net
Sent: Monday, April 15, 2019 6:04 AM
To: ESTERSON Sarah * ODOE
Subject: Amendment#5 Stateline wind project
Attachments: AUSWEA-2004conference.pdf

Ms. Esterson,
Attached is the final document for support of my testimony for the amendment#5 of Stateline wind project. Please send confirmation that all 4 documents were received.
Thank you,
Cindy Severe
82422 Vansycle rd
Helix, OR 97835

To the Oregon Dept of Energy

This testimony is in regards to the amendment #5 of the Stateline 3 wind project. This would be the 5th such amendment requested by the applicant for the Stateline wind project. How many amendments will EFSC grant this applicant? The amendment process does not specify a number but common sense dictates that an applicant should be prepared for the whole entire process when they ask for a site certificate the first time. This is reasonable and practical for many reasons. A wind developer demands surety, but this amendment process does not grant the same consideration for an affected public. EFSC granting these amendments places the balance of power squarely with the developer.

The wind developer has asked for the name change to be given to the Stateline 3 re-power project as the "Vansycle II". The Stateline 3 amendment was granted under the site certificate of the Stateline wind power facility. Each wind project has different area impacts and site conditions unique to each project. It is also, for the most part, located in an entirely different physical location from the original "Vansycle Ridge Wind Power Facility". The developer has no legitimate, factual or legal basis for this request, therefore, EFSC cannot grant this action. It would be akin to registering a 2007 Honda Element with the Oregon Dept of Motor Vehicles, driving it for 10 years, and then wanting to re-register it as a 2019 Dodge Ram pickup.

OAR 345-027-0060

Request to Amend Certificate

(f)" An analysis of whether the facility, with the proposed change, would comply with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances if the Council amends the site certificate as requested. For the purpose of this rule, a law, rule or ordinance is "applicable" if the Council would apply or consider the law, rule or ordinance under OAR 345-027-0070 (10)."

The request for another amendment of the Stateline 3 wind project must comply with the existing rules of Umatilla county siting codes for wind energy UCDC 152.616 (HHH). OAR 345-027-0070 (10) In making a decision to grant or deny issuance of an amended site certificate, the Council shall apply the applicable substantive criteria, as described in OAR 345-022-0030, in effect on the date the certificate holder submitted the request for amendment and all other state statutes, administrative rules, and local government ordinances in effect on the date the Council makes its decision. ORS 469.401 (2) requires parties to abide by the local ordinances and state laws and the rules of the council in effect on the date the site certificate or amended site certificate is executed. OAR 345-022-0030(2)(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)

(B) (3) As used in this rule, the "applicable substantive criteria" are criteria from the affected local government's acknowledged comprehensive plan and land use ordinances that are required by the statewide planning goals and that are in effect on the date the applicant submits the application."

It was discussed in exhibit X of the amendment#5 of the Stateline project that there will be an increase of noise impacts. It further states that these increases can be mitigated. I would like to submit facts, scientific documents, and testimony from leading experts in the wind industry to dispute the fallacy of the findings of mitigation.

The International Standardization Organization (ISO) 9613-2 was never meant to be used to measure wind turbine noise. It is was designed to measure factory noise. Original design constraints of the standard are:
A noise source must be 30 meters or below
Non-wind related
Without turbulent wake
Wind turbines are 80 meters or greater, specific to wind, and turbulent wake plays a major role. When this standard is applied in the models, they will yield understated noise levels. Attached is the document *Neglect of*

***Wind Shear in Assessing Long Range Propagation of Wind Turbine Noise*,** **author Mike Toft.**

The factory noise warranties of wind turbines are originated at the factory site on flat, level terrain and NOT based on real terrain noise refraction and travel in the actual site area. The International Electro technological Commission (IEC) 61400 standard used by the applicant fails to provide actual noise emissions on the wind turbine site. Next document attached *Problems Related to the Use of the Existing Noise Measurement Standards When Predicting Noise from Wind Turbines and Wind Farms,* authors, Vestas, Delta and Bonus Energy, will provide more facts to enlighten EFSC and ODOE.

Vestas document states: *"The wind turbines are almost always raised at sites where roughness differ from the standardized completely flat measurement site."*

"*Parameters that are not accounted for that influence the noise level: relative humidity, turbulence, inflow angle, wind shear, and turbine pitching."*

"The result (IEC 61400) is a fairly good tool for verification of warranties, but not a good tool for predicting noise at emission points where people actually can get annoyed."

Turbine noise warranties used in the noise model prediction may not yield the same level of *actual* noise emission in the wind farm terrain.

Critical elements not accounted for in the IEC 61400 standard that influence noise levels are:

Wind Shear: This a condition where wind speed varies above ground level. Wind shear is important to note as it's role in determining, via refraction, the propagation and intensity of outdoor noise. It is the principal cause of noise levels being often unexpectedly enhanced at locations a long way downwind of the noise source. It is known that there is no accepted algorithms to predict these refractions, sound propagation models cannot evaluate conditions that have vertical or horizontal turbulence even though it is known they can add, significant sound at a "noise sensitive receiver" when present.

Amplitude Modulation (AM): This is one of the most important noise characteristics of wind turbines. This is mechanical noise tones emitted

that is highly intrusive and causes annoyance, sleep disruption, and adverse health impacts. It is quite similar to helicopter "blade slap", and itself, the result of blade vortex interaction (BVI). This noise has been well understood for decades, except by the wind industry, and it's denial of this fact.

Attached document, *A Proposed Metric for Assessing the Potential of Community Annoyance from Wind Turbine Low-Frequency Noise Emissions,* author Dr. Neil Kelley, was commissioned by the U.S. Dept. of Energy to investigate the effects of low-frequency noise (LFN) in neighboring structures. Dr. Kelley was able to provide data and factual analysis of the LFN that plagued neighboring homes and the adverse effects of unwelcome LFN levels.

The CADNA/A software made by DataKustic is based on the ISO 9613-2 standard. Acousticians hired by the wind industry insist that this is an appropriate method for modeling wind turbine sound. However, the software was never validated for wind turbine noise and is a tool to measure industrial noise, construction, other ground based noise sources. Henrich A Metzen of DataKustic GmbH[3], maker of CADNA/A confirmed, in an e mail, that:
"long range propagation including atmospheric refraction is not part of the standards used for (normal, "standard") noise calculations. It is known that atmospheric refraction may cause sound to be refracted downwards again and contributing strongly to the level at long distances. The atmosphere in the standards existing is just homogeneous above height."
Email from H. Metzen, DataKustic GmbH, manufacturer of CADNA/A software, Nov. 16,2006

EFSC with the above facts, this amendment #5 cannot be granted as it is based on incomplete and misleading statements on noise mitigation. Several developers have been held legally accountable for noise levels exceeding the noise levels predicted in the models, once the project became operational. At the Invenergy Willow Creek wind farm in Morrow Co and Iberdrola's Hardscrabble wind project in upper state New York, residents

were successful in holding the developer accountable for misleading noise projections.

Respectfully,
Cindy Severe
82422 Vansycle Rd
Helix, Oregon 97835

SERI/TP-217-3261
UC Category: 60
DE88001113

A Proposed Metric for Assessing the Potential of Community Annoyance from Wind Turbine Low-Frequency Noise Emissions

N.D. Kelley

November 1987

Presented at the Windpower '87
Conference and Exposition
October 5-8, 1987
San Francisco, California

Prepared under Task No. WE721201
Program No. 8

Solar Energy Research Institute
A Division of Midwest Research Institute

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A PROPOSED METRIC FOR ASSESSING THE POTENTIAL OF COMMUNITY ANNOYANCE FROM WIND TURBINE LOW-FREQUENCY NOISE EMISSIONS

N.D. Kelley
Solar Energy Research Institute
Golden, Colorado 80401

ABSTRACT

Given our initial experience with the low-frequency, impulsive noise emissions from the MOD-1 wind turbine and their impact on the surrounding community, the ability to assess the potential of interior low-frequency annoyance in homes located near wind turbine installations may be important. Since there are currently no universally accepted metrics or descriptors for low-frequency community annoyance, we performed a limited program using volunteers to see if we could identify a method suitable for wind turbine noise applications. We electronically simulated three interior environments resulting from low-frequency acoustical loads radiated from both individual turbines and groups of upwind and downwind turbines. The written comments of the volunteers exposed to these interior stimuli were correlated with a number of descriptors which have been proposed for predicting low-frequency annoyance. The results are presented in this paper. We discuss our modifications of the highest correlated predictor to include the internal dynamic pressure effects associated with the response of residential structures to low-frequency acoustic loads. Finally, we outline a proposed procedure for establishing both a low-frequency "figure of merit" for a particular wind turbine design and, using actual measurements, estimate the potential for annoyance to nearby communities.

INTRODUCTION

Experience with wind turbines has shown that it is possible, under the right circumstances, for low-frequency (LF) acoustic noise radiated from the turbine rotor to interact with residential structures of nearby communities and annoy the occupants. Currently there are no universally accepted metrics or descriptors for community annoyance from low levels of LF noise. It is important from both a design and an operational perspective that the potential for such annoyance from wind turbines be quantified as much as possible. This is not a straightforward task, given the highly subjective nature of human response to noise in this frequency range. Given the lack of guidance in this area, we performed a limited experiment in which several volunteers were asked to describe their impressions of three electronically simulated, interior, LF noise environments related to the operation of wind turbines. We correlated the volunteers' responses with a series of currently available LF noise descriptors and identified two that we believe to be the most efficient. The spectral definitions of these descriptors were then modified to include the influence of an intervening residential structure and the levels adjusted for a reference propagation distance.

BACKGROUND

The modern wind turbine radiates its *peak* sound power (energy) in the very low frequency (VLF) range, typically between 1 and 10 Hz. This is a direct consequence of its small rotor solidity and relatively low rotational (shaft) speed (17.5-300 rpm). Other common rotating machinery employing lifting blades (such as the large fans and blowers associated with forced-draft cooling towers and ventilation systems) generally radiate their peak sound powers at frequencies greater than 60 Hz. This higher frequency is due to a combination of high rotor solidity and much faster shaft speeds.

Our experience with the low-frequency noise emissions from a single, 2-MW MOD-1 wind turbine demonstrated that, under the right circumstances, it was possible to cause annoyance within homes in the surrounding community with relatively low levels of LF-range acoustic noise. An extensive investigation of the MOD-1 situation [1,2] revealed that this annoyance was the result of a coupling of the turbine's impulsive LF acoustic energy into the structures of some of the surrounding homes. This often created an annoyance environment that was frequently confined to ***within the home itself.***

LOADING OF RESIDENTIAL STRUCTURES BY LOW-FREQUENCY ACOUSTIC EMISSIONS

Impulsive Loading

A significant amount of scientific investigation has gone into documenting the response of residential structures (and resulting community annoyance) to high-energy noise events such as aircraft flyovers and short-duration, impulsive events such as sonic booms and quarrying and mining explosions [3,4]. We found that the periodic loading by the MOD-1 impulses excited a range of structural resonances within the homes measured. Figure 1 schematically illustrates the radiated acoustic frequency spectrum associated with the various types of wind turbine emission characteristics. If there was no small-scale turbulence in the turbine inflow, the acoustic spectrum would resemble the monotonic falloff in the blade passage harmonics indicated by the "steady and long-period loading curve." The curve then rises again as the processes

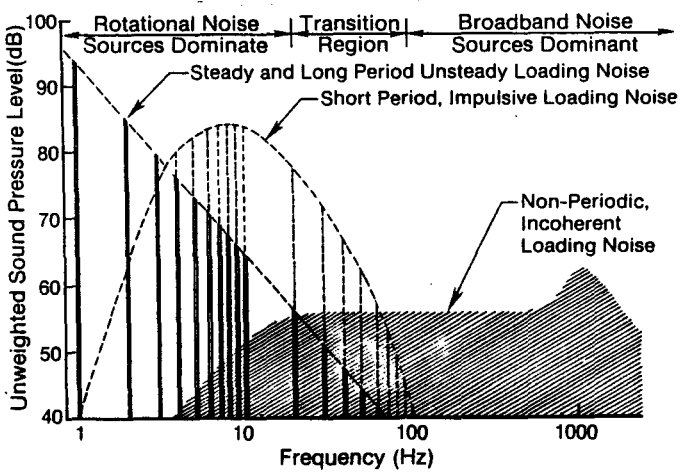

Figure 1. SCHEMATIC REPRESENTATION OF AN AVERAGED RADIATED SOUND PRESSURE SPECTRUM FROM A WIND TURBINE

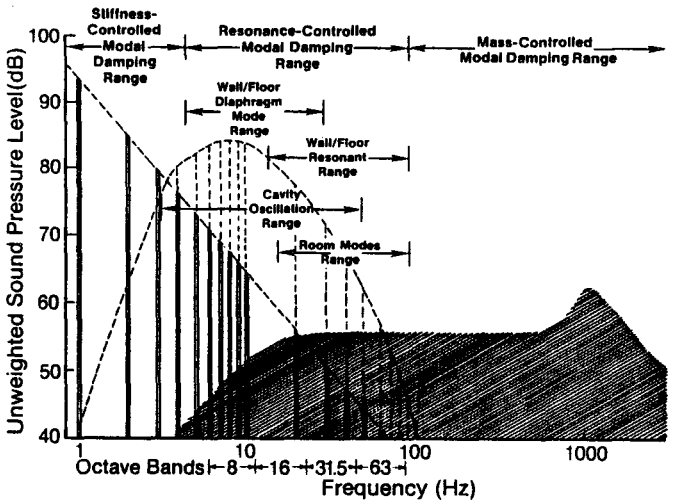

Figure 2. SCHEMATIC SOUND SPECTRUM OF FIGURE 1, WITH RESIDENTIAL VIBRATION AND ACOUSTIC MODES ADDED

responsible for the nonperiodic, incoherent, or broadband (high-frequency) radiation become dominant above 100 Hz. However, there are always some short-period aerodynamic load fluctuations as a result of the rotor encountering atmospheric turbulence, indicated by the dashed region of Figure 1. This region can expand to higher frequencies and contain considerable energy if impulses are present. A blade passing through the downstream wake of the support tower or intersecting its own wake can result in repetitive, transient aerodynamic loads that can produce LF impulsive radiation that is *periodic at the blade passage frequency* (BPF).

The acoustic-mechanical response of a residential structure to acoustic loads is schematically diagramed in Figure 2. The ranges of the various structural and acoustic resonances and the typical wind turbine acoustic spectrum have been superimposed. The dashed region, corresponding to the short-period and impulsive radiation range, overlaps with the structural resonances almost perfectly. Figure 2, therefore, illustrates the coupling mechanisms between the structure and the LF noise excitation. The temporal dynamics of this coupling are shown in Figure 3. The upper curve traces the outdoor acoustic pressure field and the lower one the internal one, as we see in the 31.5-Hz octave frequency band. The pair of turbine-generated impulses, about 8 ms in duration each, produce a strongly resonant pressure field in the house oscillating at the room fundamental of 14 Hz, lasting about 1.8 s. Thus, the action of the house has been to stretch the initial impulse duration over 100 times. The auditory time constant has been estimated to be on the order of 70-100 ms, thus, at least in theory, raising the possibility of audible detection inside the home but not necessarily outside. Hubbard and Shepherd [5] have isolated the Helmholtz response and measured enhancements up to 5 dB. They also found significant sound pressure level variations up to 20 dB when acoustic interactions were present. We have determined a typical indoor/outdoor LF acoustic transfer function using measurements from two homes near the MOD-1 turbine. The impulsive-source curve of Figure 4 illustrates this empirically derived function.

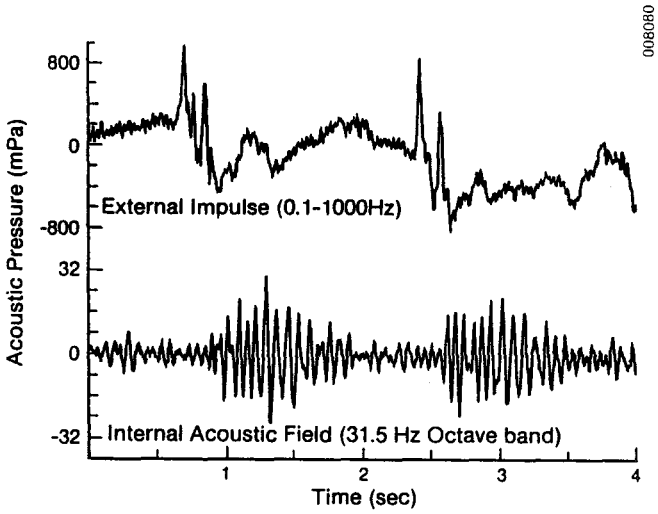

Figure 3. TRANSIENT RESPONSE OF AN INTERNAL PRESSURE FIELD TO EXTERNAL IMPULSIVE EXCITATION

Nonimpulsive Acoustic Loads

Even when an impulsive-type emission characteristic is not present (the MOD-1 did not always generate impulses), a varying level of LF acoustic energy is emitted (see the dashed region of Figure 1) as a result of the turbulent inflow. Because of the low damping present in residential structural modes in the 5-100 Hz range of Figure 1, we needed to find a well-documented source of nonimpulsive, LF acoustic excitation and indoor response for comparison. We were fortunate to obtain a series of measurements made simultaneously inside and outside five homes within a few kilometers of a gas turbine peaking generator [6]. The homes were acoustically excited by broadband LF emissions from a resonating exhaust stack. The nonimpulsive curve of Figure 4 traces the mean of the measured indoor/outdoor response for several rooms of the homes. The two curves of Figure 4 indicate that internal overpressures up to 10 dB can be expected in the 3-10 Hz

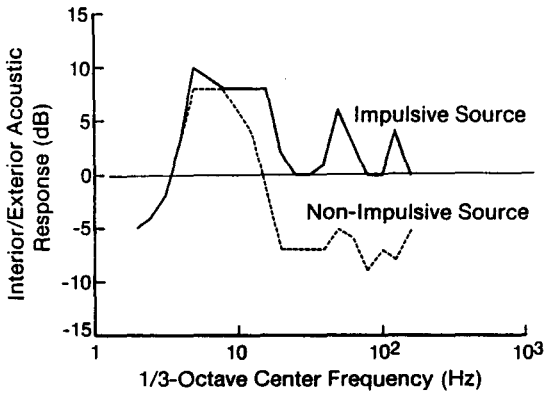

Figure 4. A TYPICAL INDOOR/OUTDOOR ACOUSTIC TRANSFER FUNCTION MAGNITUDE FOR IMPULSIVE AND NONIMPULSIVE LF ACOUSTIC LOADS

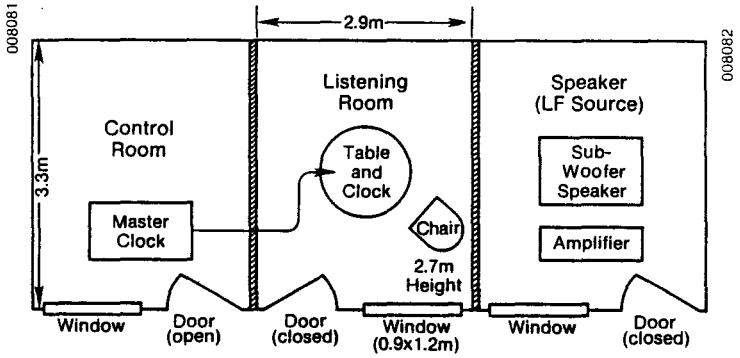

Figure 5. PLAN VIEW SCHEMATIC OF PHYSICAL ARRANGEMENT OF TESTING FACILITIES

range for both impulsive and nonimpulsive acoustic loads. Above 10 Hz, significant overpressures occur in the 40-63 Hz and 80-125 Hz 1/3-octave bands under impulsive loads. Typically, 5-7 dB of attenuation occurs in the 10-160 Hz band range for a nonimpulsive source excitation.

EXPERIMENTAL PROCEDURE

Our objective in the limited experiment reported on here was to simulate a series of LF noise environments that would be likely to exist within a small room of a home (a small bedroom, for example) as a result of the LF acoustic loading caused by wind turbine emissions. Our experience has shown that interior LF annoyance is more likely to occur and be more severe in rooms with small dimensions and at least one outside wall facing the wind turbine. This was also true of the annoyance related to the gas turbine peaking generator; i.e., the most serious annoyance occurred near the sides of the houses facing the LF source. We synthesized three interior LF noise environments that would be expected as a result of the acoustic loading of a residential structure from the following kinds of emissions:

- A single, large, multimegawatt turbine or an array of smaller turbines that *are not* producing periodic impulses *(a periodic random source)*;
- A nearby single turbine operating at a shaft speed of 30 rpm and producing impulses at the blade passage frequency *(a periodic impulsive source)*;
- An upwind *array* of turbines that are individually producing unsynchronized impulses at their blade passage frequencies *(a random impulsive source)*.

In addition to these three basic environments or *stimuli classes*, the periodic random source was repeated but with a "pink" noise masking level of 40 dBA.

Physical Setup

The physical layout of the testing environment is diagramed in Figure 5. A very low frequency or sub-woofer speaker system and its high-powered amplifier were placed in a room adjoining the listening area. The sub-woofer had a minimum frequency cutoff of about 5 Hz. This arrangement allowed only the dominant LF noise to be transmitted to the listening-room environment via the walls. It also filtered out the higher frequency sounds associated with the nonlinear response of the speaker cone (a "whooshing" sound), which was particularly evident during large excursions. The electronic equipment responsible for developing the subwoofer's "drive" signals was located in the control room. A master time code generator was also located here, and a repeater or slave unit was placed on the table in the listening room for the evaluator to time-index his or her comments. Table 1 lists the physical and acoustic properties of the listening room. The concrete slab floor minimized tactile (feeling) transmission of LF vibration to the evaluator. Since we were trying to simulate the quiet environment typical of a family home, we did not ask the staff on the other side of the partition to refrain from talking during the evaluation process. As a result, the evaluators occasionally noted hearing conversations from the offices adjacent to the rear wall of the listening room. The background noise was dominated by the sound of air moving through the ventilation system which produced an average background noise level of 35 dBA, typical of a quiet home.

Table 1. PHYSICAL AND ACOUSTIC PROPERTIES OF LISTENING-ROOM ENVIRONMENT

Dimensions	2.9 x 3.3 x 2.7 m (25.8 m^3 or 254 ft^3)
Walls	Movable partitions, composition material, nominally supported
Floor	Concrete slab covered with 1.6 cm of resilient carpet
Background Noise Level	35 dBA dominated by ventilation system noise; no attempt to reduce or mask voices generated on other side of rear wall

Evaluation Procedure

A series of sequences was developed for each type of LF noise environment in which the levels and intensities were

systematically varied. We found that the corresponding, unweighted acoustic 1/3-octave band pressure levels over the range of 2-160 Hz could be repeated to better than 0.3 dB for each test level. The three simulated characteristic wind-turbine-emission environments are *schematically* diagramed in Figure 6. The averaged 1/3-octave band pressure level spectra for each of the source characteristics, and the incremental level changes are shown in Figures 7, 8, and 9. The room background spectra are indicated with dashed lines.

Seven volunteer evaluators took part in the experiment. The group consisted of three women and four men who ranged in age from the early twenties to the early sixties. All claimed to have an adequate hearing acuity. In this choice of a very limited number of participants, we attempted to obtain what we believed to be a small, random sample of the general population.

During the evaluation, the evaluator sat at the table indicated in Figure 5 on which a record log was furnished. The evaluators were asked to write down their impressions of what they were currently experiencing along with the time indicated on the clock. The evaluation sequence began with the periodic random simulation,

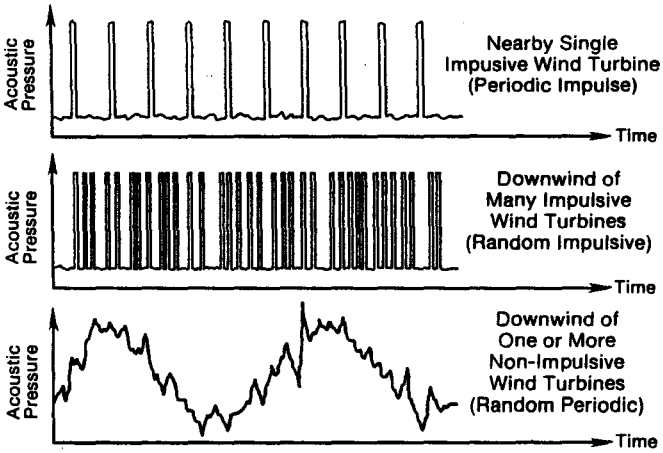

Figure 6. SIMULATED ACOUSTIC EMISSION CHARACTERISTICS OF WIND TURBINES

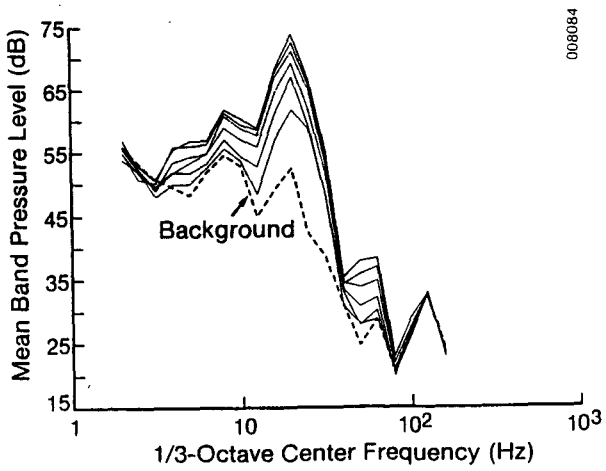

Figure 7. PERIODIC RANDOM STIMULI SPECTRA

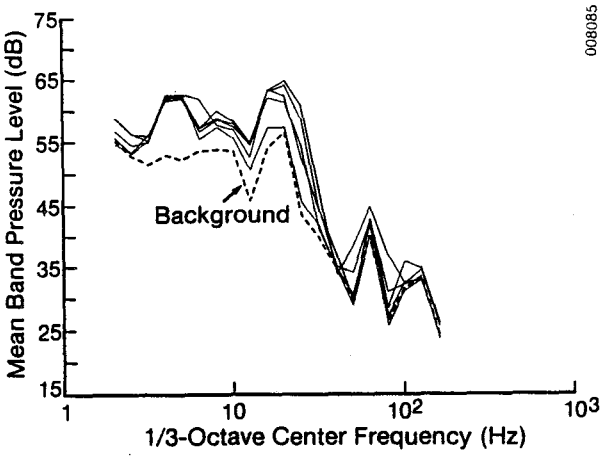

Figure 8. PERIODIC IMPULSE STIMULI SPECTRA

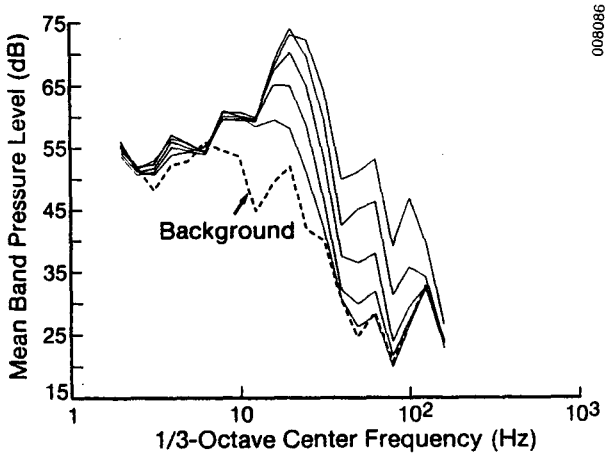

Figure 9. RANDOM IMPULSIVE STIMULI SPECTRA

stepped up through the six intermediate levels, and then back down again to the background level. No indication was given to the evaluators of the stimuli classes or their incremental steps. The initiation and completion times of each incremental step in a simulation were logged for later comparison with the evaluator's opinions. The dwell or integration time at each incremental stimuli step was held at 2 minutes plus or minus a 20% *random* variation to prevent the evaluator from anticipating changes in the testing sequence. The five levels of the periodic impulsive simulation were then sequenced, and this was followed by the five levels of the random impulsive stimuli. Finally, 2 minutes after the conclusion of the random impulsive simulation, the 40 dBA pink noise masking was activated from two speakers in the room's ceiling and the random periodic stimuli sequence was repeated. The entire four-pass process required about 45 minutes to complete.

Data Reduction

The evaluators' responses were quantified by means of a six-level ranking in terms of the following four annoyance categories:

(1) Loudness or noise level

(2) Overall degree of annoyance and displeasure

(3) Any sensations of vibration or pressure

(4) The sensing of any pulsations.

Table 2 lists the subjective ranking criteria. The ranked responses were then correlated by linear regression with a series of low-frequency noise descriptors or metrics. These particular metrics or spectral weighting factors have been suggested as measures of LF annoyance by a number of investigators, and they include the following:

- The ISO (International Organization for Standardization) proposed G_1 weighting [7]
- The ISO proposed G_2 weighting [7]
- The LSPL or low-frequency sound pressure level weighting [8]
- The LSL or low-frequency sound level weighting [8]
- The ISO/ANSI (American National Standards Institute) C-weighting [9]
- The ISO/ANSI A weighting [9].

Figure 10 plots these weighting windows over a frequency range of 2-100 Hz. The ISO G_1 and G_2 curves have been proposed for assessing subjective human responses to acoustic noise in the infrasonic range (less than 20 Hz). The ISO/ANSI A- and (usually) C-weighting curves are standard on sound level measuring equipment. As Figure 10 shows, the C-weighting passes much lower frequencies than does the most common noise description,

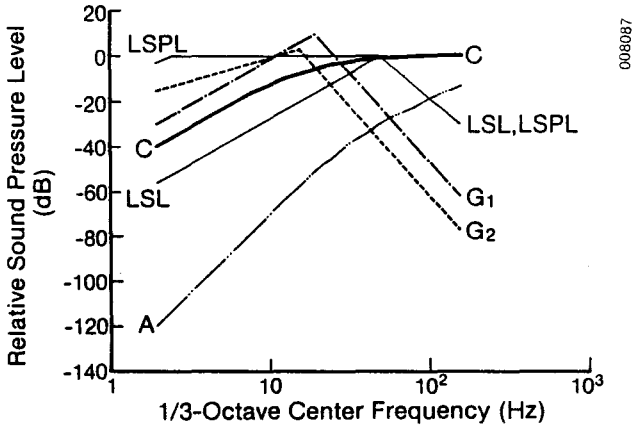

Figure 10. LOW-FREQUENCY NOISE METRICS SPECTRAL WEIGHTINGS

the A-weighting scale. The LSL and LSPL metrics have been proposed by Tokita et al. [8] for assessing residential interior environments. The LSL metric "reflects three low-frequency noise influences: structural, physiological, and psychological complaint stimuli" [8]. The LSL metric has been proposed as an appropriate descriptor for evaluating residential interior environments that contain both infra- and low-frequency audible acoustic components.

RESULTS

The ranked responses to the four annoyance categories were correlated with the four stimuli sequences by regression and are summarized in Table 3. Immediately

Table 2. SUBJECTIVE RANKING CRITERIA FOR LOW-FREQUENCY (LF) NOISE ENVIRONMENTS

Rank	Stimuli Response Rating 0	1	2	3	4	5
	Perception					
Noise level (loudness)	Can't hear	Barely can here	Weak, but definitely audible	Moderate loudness	High noise level, loud	Very high noise level, very loud
Annoyance/ displeasure	None	Barely aware of presence	Definitely aware of presence	Moderate distraction/ some irritation	Very annoying, irritating	Extremely annoying, uncomfortable
Vibration/ pressure	None	Feel presence	Definitely feel vibration/ pressure	Moderate vibration/ pressure feeling	Very noticeable	Severe vibration
Pulsations	None	Barely feel pulses	Definite pulses or bumping	Moderate booming or thumping	Heavy booming or thumps	Very heavy pulses, booms, thumps
	Acceptable		???????		Clearly unacceptable	

Table 3. CORRELATION COEFFICIENTS OF EVALUATOR ANNOYANCE RATINGS OF LF NOISE STIMULI VERSUS SIX NOISE METRICS

Metric	Noise Level	Annoyance/ Displeasure	Vibration/ Pressure	Pulsations	Mean
G_1	0.898 (0.033)	0.933 (0.018)	0.709 (0.170)	0.819 (0.115)	0.840 (0.084)
G_2	0.873 (0.071)	0.879 (0.053)	0.701 (0.157)	0.769 (0.148)	0.806 (0.107)
LSPL	0.898 (0.035)	0.924 (0.034)	0.711 (0.155)	0.831 (0.107)	0.841 (0.083)
LSL	0.935 (0.021)	0.958 (0.014)	0.732 (0.174)	0.860 (0.097)	0.871 (0.077)
C	0.940 (0.030)	0.947 (0.008)	0.725 (0.167)	0.841 (0.098)	0.863 (0.076)
A	0.384 (0.464)	0.269 (0.413)	0.413 (0.137)	-0.077 (0.719)	0.247 (0.433)

obvious is the superiority of the five metrics that pass significant low frequencies in comparison with the A-weighted scale. These results, limited as they are, seem to confirm that (1) people do indeed react to a low-frequency noise environment and (2) A-weighted measurements are not an adequate indicator of annoyance when *low frequencies are dominant.* Table 4 ranks the efficiency of each metric for the stimuli population in terms of the correlation coefficient and stimuli-to-stimuli class standard deviation. These rankings, with the exception of the last two, contain two of the six metrics. We simply do not have a sufficient number of statistical degrees of freedom to differentiate further. Actually, the only statistically significant difference is between the five LF metrics and the A-weighted scale. This experiment would have to be repeated with a much larger number of evaluators (population) to confirm Tables 3 and 4 in terms of their individual matrix elements.

ESTABLISHING AN INTERIOR ANNOYANCE SCALE

The rankings of the evaluators' comments were summarized for each of the four stimuli, and three annoyance-level classes were determined for each. The perception-threshold level is defined as the corresponding LSL- and C-weighted band levels for an evaluation ranking of 1. The annoyance-threshold level classification was arbitrarily assigned a ranking of 2.5, and the unacceptable-annoyance level classification was given a value of 4 or greater. The LSL- and C-weighted metrics corresponding to the annoyance classification rankings are listed in Table 5 for the four stimuli evaluated. As the table shows, three of the four stimuli have similar threshold-perception LSL- and C-weighted values. It is interesting to note that, even though many individual impulsive sources are present, the net effect of a *random summing* of these contributions invokes a response similar to that from a periodic random source. It is also evident that the threshold is considerably lower for a single or a few distinct impulsive sources. This is reflected by the general source characteristics listed at the bottom of Table 5. For all practical purposes, the annoyance level criteria for the C-weighted scale are 10 dB higher than those for the LSL-weighted band pressure level (BPL).

PREDICTING AN INTERIOR LSL OR C LEVEL

To assess the potential of interior LF noise annoyance in nearby communities, we must estimate the LSL or C metric levels from available acoustic measurements of the turbine design. Generally, this will be an averaged, unweighted (linear) 1/3-octave band spectrum over a 5-100 Hz range and, when adjusted for propagation losses, it can be considered representative of the external acoustic load present at the home being evaluated. We noted earlier that the structural dynamic response of houses alters both the temporal and spectral characteristics of the external acoustic excitation and that the alteration characteristics depend on whether the source is impulsive or not. To predict an interior LSL- or C-level (PLSL or PC), we must *spectrally* apply the appropriate

Table 4. APPROXIMATE EFFICIENCY RANKING OF THE SIX METRICS AS DESCRIPTORS OF INTERIOR, LF NOISE ANNOYANCE

Rank	Metric	$r^{(a)}$	Stimuli Class Variance Coefficient
1	LSL	0.871	8.8%
1	C	0.863	8.8%
2	LSPL	0.841	9.8%
2	G_1	0.840	10.0%
3	G_2	0.806	13.3%
4	A	0.247	175%

[a]Correlation coefficient.

indoor/outdoor acoustic transfer function magnitudes plotted in Figure 4 to the measured 1/3-octave band spectrum. Using these functions, we have replotted the original frequency weighting characteristics of the LSL and C metrics in Figure 11 for both impulsive and non-impulsive sources. Table 6 lists the corresponding weighting factors for the transfer function magnitudes of Figure 4.

A limited verification of this procedure is shown in Figure 12. The predicted or PLSL values are plotted against the measured value for a bedroom excited by the MOD-1 impulses. The remaining rooms were in various homes excited by the gas turbine for which annoyance was reported. Figure 13 plots the observed interior LSL values in relation to the LSL annoyance criteria thresholds. While complaints were received from the residents of all four homes in which these rooms were located, we do not have sufficient information to completely verify the vertical stratification other than that it was above the perception level.

ESTABLISHING A REFERENCE EXTERNAL ACOUSTIC LOADING

The method of estimating a representative internal PLSL or PC value requires a suitable measure of the external acoustic loading spectrum. Since most homes are located

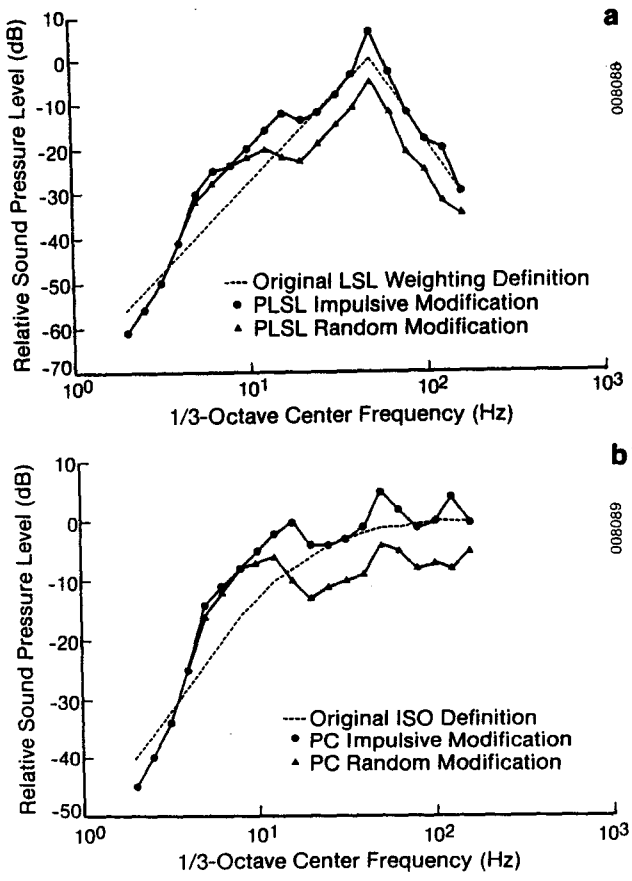

Figure 11. (a) PLSL SPECTRAL WEIGHTING; (b) ISO AND MODIFIED C SPECTRAL WEIGHTING

Table 5. INTERIOR LF ANNOYANCE-LEVEL CRITERIA EMPLOYING THE LSL AND C METRICS

Stimuli Class	Threshold Perception LSL (dB)	Threshold Perception C (dB)	Annoyance Threshold LSL (dB)	Annoyance Threshold C (dB)	Unacceptable Annoyance LSL (dB)	Unacceptable Annoyance C (dB)
Nonimpulsive, periodic random	58	68	65	75	68	77
Periodic impulsive source	53	63	57	67	60	68
Random periodic source	59	67	68	76	70	78
Periodic random w/40 dBA mask	59	68	65	75	67	79
Considering Only General Source Characteristics						
Nonimpulsive source	58	68	65	75	68	78
Impulsive source	53	63	57	67	60	68

Table 6. INDOOR/OUTDOOR TRANSFER FUNCTION WEIGHTING FACTORS

1/3-Octave Band Center Frequency (Hz)	Impulsive Transfer Function Magnitude LSL (dB)	Impulsive Transfer Function Magnitude C (dB)	Nonimpulsive Transfer Function Magnitude LSL (dB)	Nonimpulsive Transfer Function Magnitude C (dB)
2.0	-61	-45	-61	-45
2.5	-56	-40	-56	-40
3.15	-50	-34	-50	-34
4.0	-41	-25	-41	-25 [a]
5.0	-30	-14	-32	-16
6.3	-25	-11	-28	-12
8.0	-24	- 8	-24	- 8
10.0	-20	- 5	-22	- 7
12.5	-16	- 2	-20	- 6
16.0	-12	0	-22	-10
20.0	-14	- 4	-23	-13
25.0	-12	- 4	-19	-11
31.5	- 8	- 3	-15	-10
40.0	- 3	- 1	-11	- 9
50.0	+ 6	+ 5	- 5	- 4
63.0	- 3	+ 2	-12	- 5
80.0	-12	- 1	-21	- 8
100	-18	0	-25	- 7
125	-20	+ 4	-32	- 8
160	-30	0	-35	- 5

[a] Recommended minimum 1/3-octave spectral range.

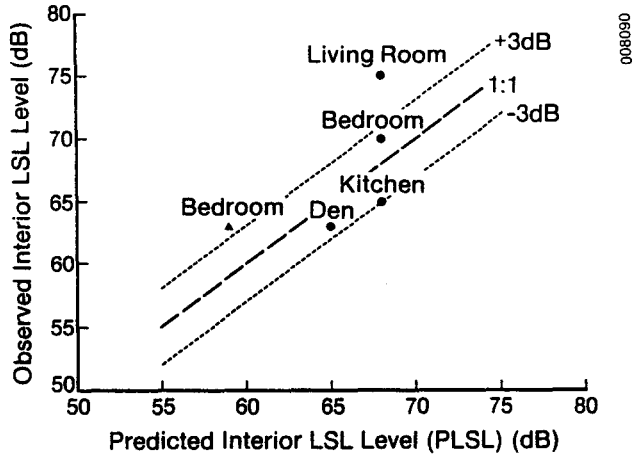

Figure 12. PREDICTED VS. OBSERVED INTERIOR LSL LEVEL COMPARISON

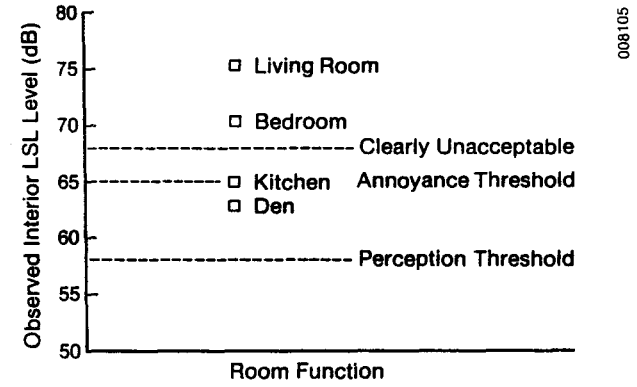

Figure 13. OBSERVED INTERIOR LSL VALUES FOR NONIMPULSIVE SOURCE

some distance from the nearest wind turbine(s), a method must be devised to provide a reference spectrum that takes into account situations in which atmospheric refraction and terrain reflection increase the acoustic levels above those expected from spherical divergence alone. We recommend using a reference distance of 1 km (0.6 mile) for calculating a "figure of merit" PLSL or PC level for a given wind turbine installation. To account for worst-case terrain/atmospheric focusing, we also recommend that 15 dB be added to the PLSL or PC values calculated at the 1 km distance. As an example, Table 7 lists the predicted or PLSL values for a home located 1 km from the MOD-1 and MOD-2 wind turbines [10].

SUGGESTED PROCEDURE FOR ESTIMATING THE INTERIOR LF ANNOYANCE POTENTIAL OF A GIVEN TURBINE DESIGN

The results of this paper are summarized below as a recommended procedure for establishing a low-frequency figure of merit for a given wind turbine design.

(1) Obtain a series of representative, unweighted, averaged 1/3-octave band pressure spectra over a range of 5-100 Hz for a range of operating conditions. Make the measurements at a distance from the turbine where a sufficient signal-to-noise ratio for this frequency range can be reasonably obtained. Use recording periods of at least 2 minutes but not more than 10 minutes.

(2) Establish whether the turbine exhibits impulsive radiation characteristics.

(3) Determine the equivalent near-field PLSL- or PC-weighted level by using the contents of Table 6 for impulsive or nonimpulsive sources to weight the linear 1/3-octave band spectra.

(4) Calculate the equivalent PLSL or PC levels at the reference distance of 1 km by assuming spherical divergence (-6 dB per doubling of distance).

(5) Add 15 dB to the results of step (4). This result is the figure of merit for the worst-case, low-frequency-range acoustic emissions associated with the wind turbine design. This level or these levels can now be compared with Table 5 to assess the interior annoyance potential.

Table 7. PREDICTED INTERIOR LSL (PLSL) VALUES AT 1 km FROM THE MOD-1 AND MOD-2 WIND TURBINES

Turbine	PLSL (dB)	PLSL+15 (dB)
MOD-1 Turbine (Severe impulsive characteristic)		
35 rpm operation	65	80
23 rpm operation	54	69
MOD-2 Turbine (Nonimpulsive characteristic)		
17.5 rpm operation	41	56

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REFERENCES

1. Kelley, N.D., H.E. McKenna, and R.R. Hemphill, "A Methodology for Assessment of Wind Turbine Noise Generation," *J. Solar Engineering*, Vol. 21 (1981), pp. 341-356.

2. Kelley, N.D., H.E. McKenna, R.R. Hemphill, C.L. Etter, R.L. Garrelts, and N.C. Linn, *Acoustic Noise Associated with the MOD-1 Wind Turbine: Its Source, Impact, and Control*, SERI/TR-635-1156, Golden, CO: Solar Energy Research Institute (February 1985), 262 pp.

3. Carden, H.D., and W.H. Mayes, *Measured Vibration Response Characteristics of Four Residential Structures Excited by Mechanical and Acoustical Loadings*, NASA/TN-D-5776, Hampton, VA: NASA Langley Research Center (1970), 59 pp.

4. National Research Council, Comm. on Hearing, Bioacoustics, and Biomechanics Assembly of Behavioral and Social Sciences, CHABA Working Group 84, *Assessment of Community Response to High-Energy Impulsive Sounds*, Washington, D.C.: National Academy Press (1981), 31 pp.

5. Hubbard, H.H., and K.P. Shepherd, *The Helmholtz Resonance Behavior of Single and Multiple Rooms*, NASA/CR-178173, Hampton, VA: NASA Langley Research Center (September 1986), 26 pp.

6. Robin Towne, Assoc., Environmental Study of Low-Frequency Noise and Vibration, A Report to the Portland General Electric Co., Portland, OR: Robin Towne, Assoc. (1974), 144 pp.

7. International Organization for Standardization (ISO), Draft Proposal for "Acoustics Methods for Describing Infrasound," ISO/DIS 7196, Geneva, Switzerland: ISO.

8. Tokita, Y., A. Oda, and K. Shimizu, "On the Frequency Weighting Characteristics for Evaluation of Infra and Low-Frequency Noise," *Proc. 1984 Conf. on Noise Control Engineering*, G.C. Maling, Jr., ed., Poughkeepsie, NY: Inst. of Noise Control Engineering (1984), pp. 917-920.

9. American National Standards Institute (ANSI), "American National Standard Specification for Sound Level Meters," ANSI S1.4-1983, New York, NY: ANSI (1983).

10. Kelley, N.D., H.E. McKenna, E.W. Jacobs, R.R. Hemphill, and N.J. Birkenheuer, *The MOD-2 Wind Turbine: Aeroacoustical Noise Sources, Emissions, and Potential Impact*, SERI/TR-217-3036, Golden, CO: Solar Energy Research Institute (to be published).

Neglect of Wind Shear in Assessing Long Range Propagation of Wind Turbine Noise

M W Toft

About the author:

- BSc in Physics (University of Bristol); PhD on turbulence and vorticity in superfluid flow (University of St Andrews)
- Over 20 years' experience with CEGB and successor companies in acoustics-related field of ultrasonic non-destructive testing (NDT), as applied to safety of UK nuclear reactors; in particular the validation of theoretical models of propagation of acoustic and elastic waves; programme manager for Generic NDT Development at BNFL-Magnox Generation; provision of expert advice and documentation to the Nuclear Installations Inspectorate, on capability of ultrasonic inspection to guarantee structural integrity of UK nuclear reactors
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- Member of Peer Review College of the Engineering and Physical Sciences Research Council, 2000 - 2003
- On retiring from the nuclear industry in 2005, made Visiting Fellow at the Department of Physics, University of Bristol, although not active in the latter role
- Expert Witness on noise to Save Berkeley Vale in Public Inquiry APP/C/1625/A/11/2155923/NWF, Jan-Sep 2012, opposing the proposed wind farm development at Standle Farm, Stinchcombe, Dursley Glos

Contents

Section 1

Wind Shear - Introduction

Wind shear effects on noise propagation

Wind shear is change in wind speed with height above ground level

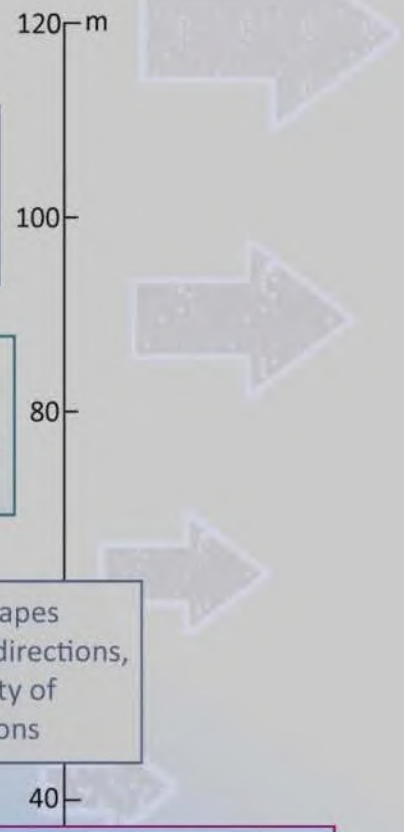
Wind speed usually increases with height - but not always: positive wind shear is the normal condition

Refraction by wind shear is of *paramount* importance in determining propagation paths of outdoor noise

Wind shear refraction shapes propagation paths in all directions, strongly affecting intensity of sound at receiving locations

Wind shear is a principal cause of noise levels being often unexpectedly enhanced at locations a long way downwind of a noise source

Understanding of effects of wind shear was established by Stokes, Reynolds and Rayleigh in the mid to late 19th Century



Section 2

Motorway Noise Example

Wind shear effects on noise propagation

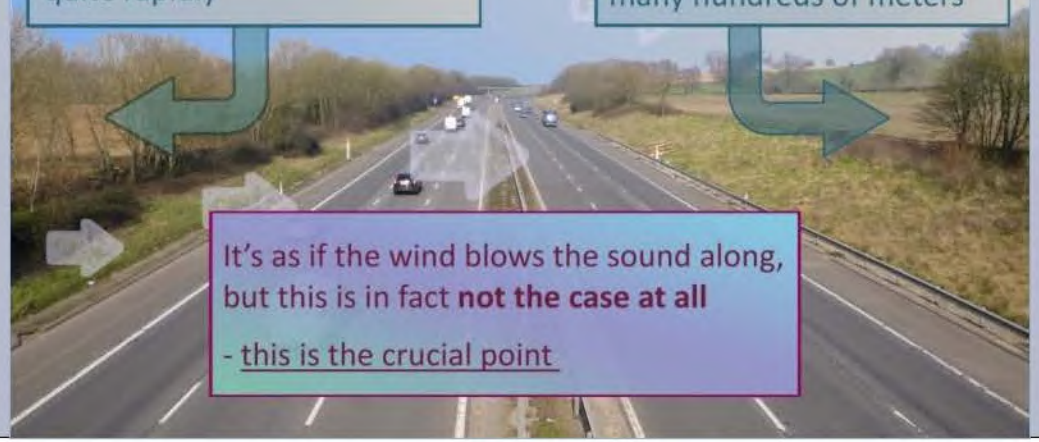
Motorway noise provides an everyday example:

If you stand immediately next to a motorway when the wind is blowing across it, it doesn't matter which side you stand on, upwind or downwind, *noise levels will be essentially the same*

If you walk away from the motorway on the upwind side, ie walking into the wind, noise levels will drop off quite rapidly

This is not true of walking away on the downwind side:

noise will persist at significant levels for many hundreds of meters



It's as if the wind blows the sound along, but this is in fact **not the case at all**

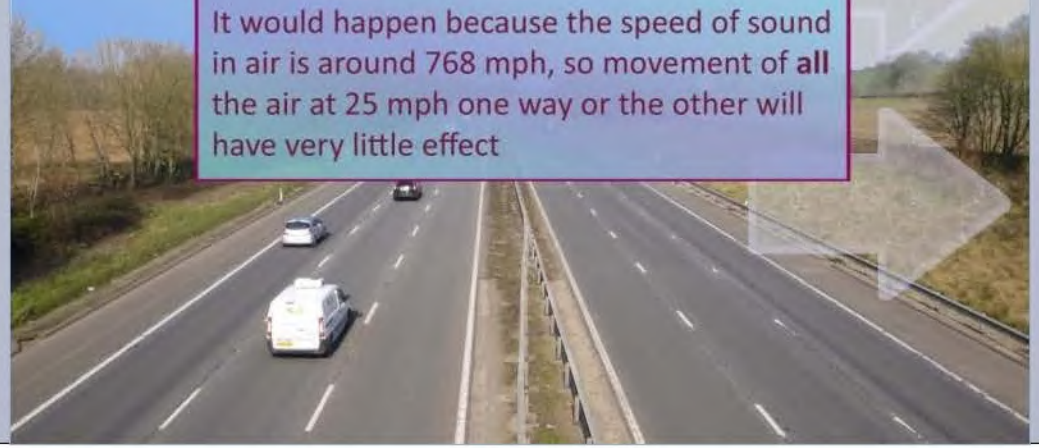
- this is the crucial point

Wind shear effects on noise propagation

Were there to be a 25 mph gale blowing across the motorway, with the **same wind speed at all heights**, the motorway would be equally noisy at long distances upwind as downwind

This effect is not within our normal experience but would occur in such a situation of zero wind shear

It would happen because the speed of sound in air is around 768 mph, so movement of **all** the air at 25 mph one way or the other will have very little effect



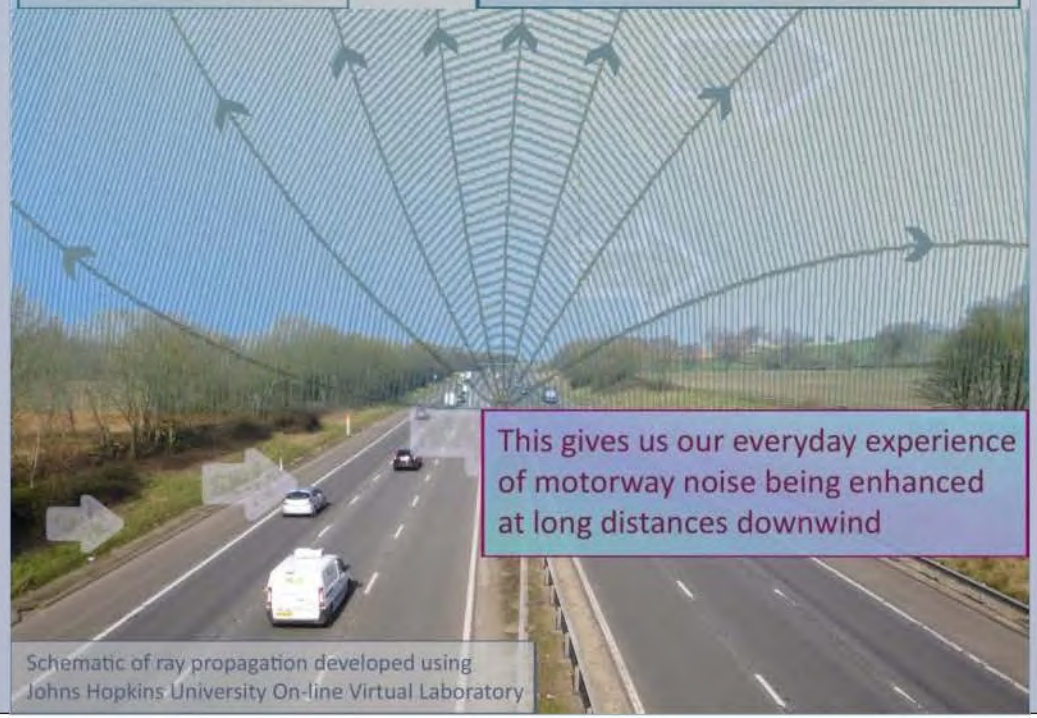
Wind shear effects on noise propagation

But in practice the wind is generally stronger at greater heights, which progressively changes the speed of sound with height

This in turn changes the curvature of the wavefronts and hence the direction of their propagation

Soundwaves consequently bend back down to earth on the downwind side at longer distances from the source

The opposite happens on the upwind side



This gives us our everyday experience of motorway noise being enhanced at long distances downwind

Schematic of ray propagation developed using Johns Hopkins University On-line Virtual Laboratory

Section 3

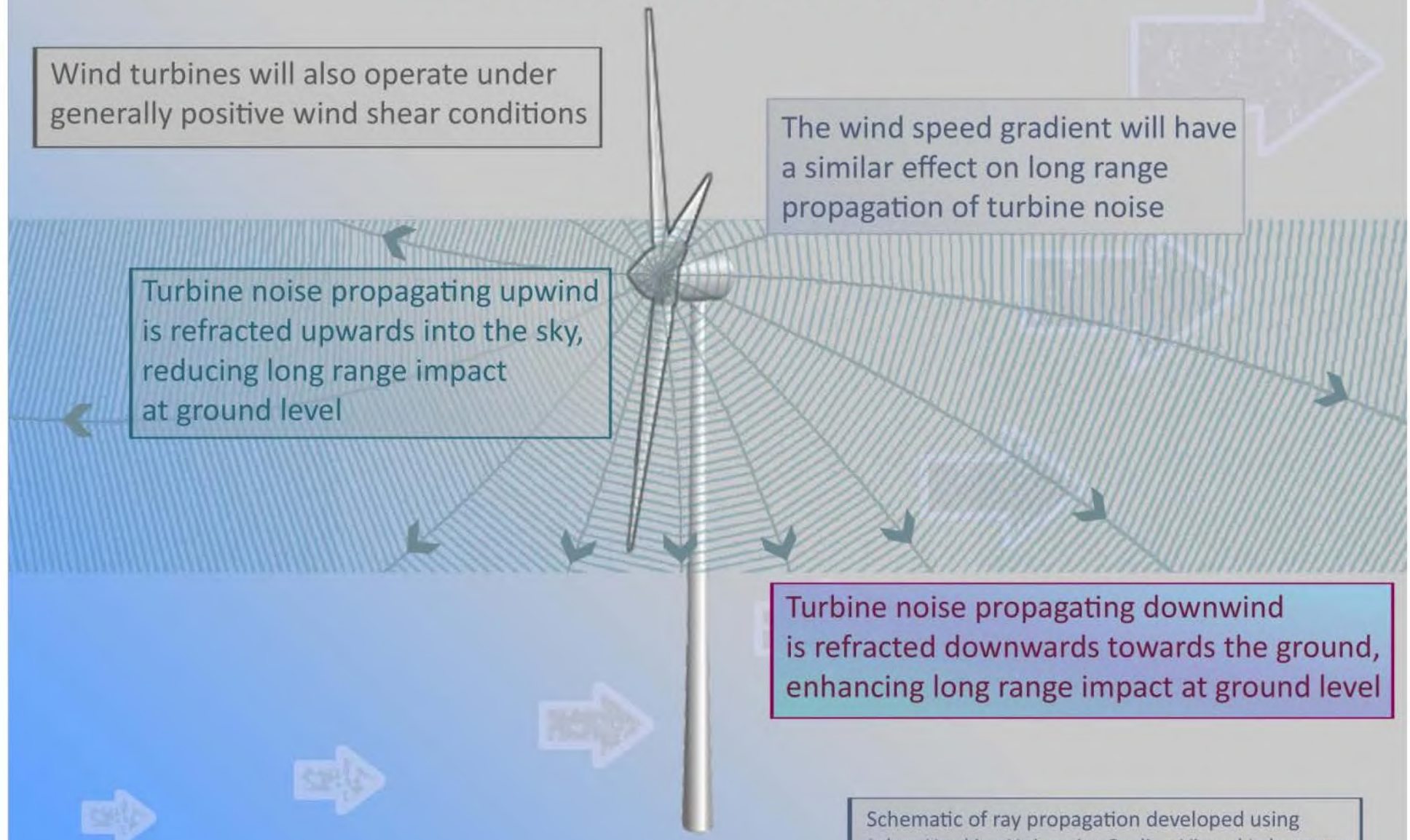
Application to Wind Turbine Noise

Wind shear effects on noise propagation

Wind turbines will also operate under generally positive wind shear conditions

The wind speed gradient will have a similar effect on long range propagation of turbine noise

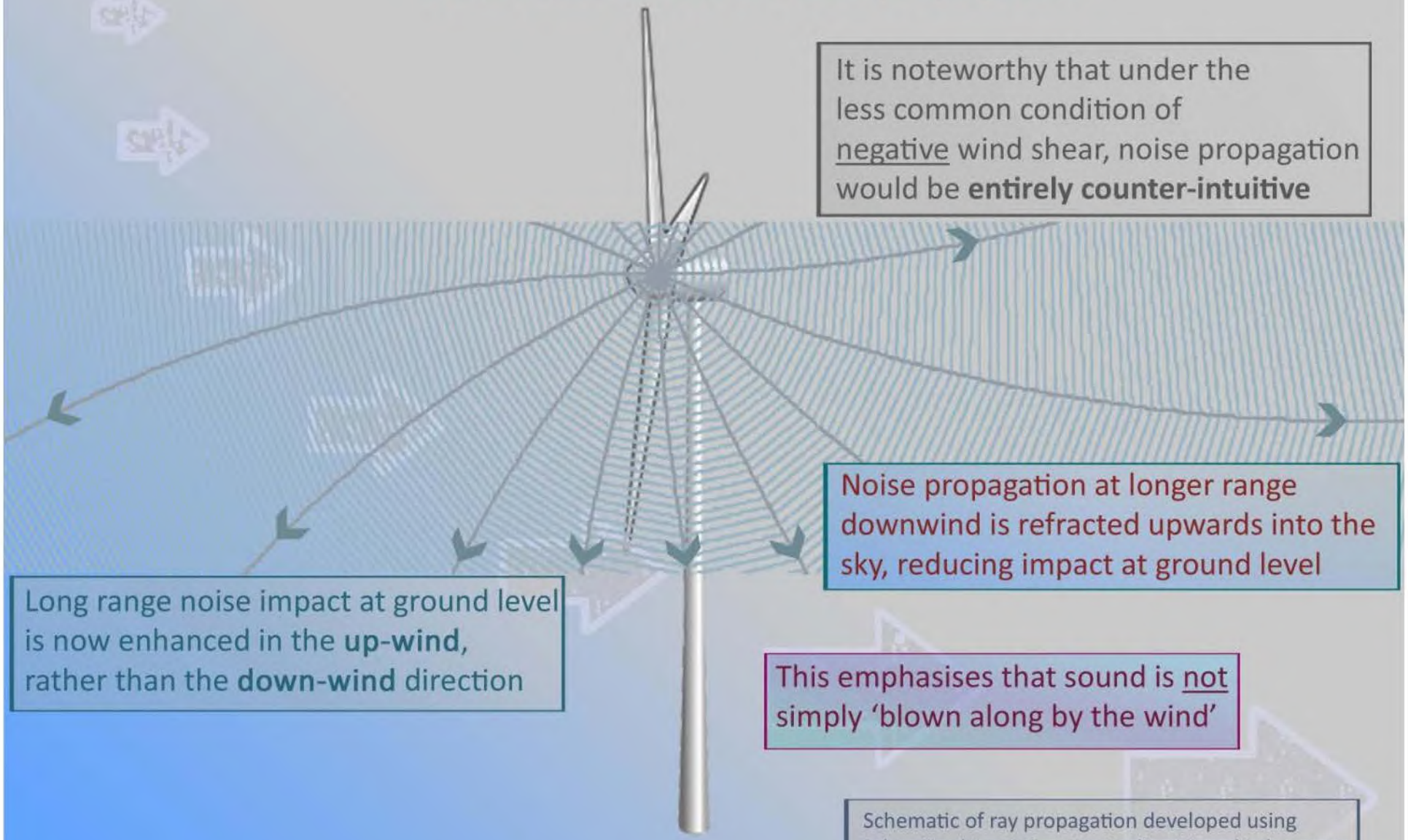
Turbine noise propagating upwind is refracted upwards into the sky, reducing long range impact at ground level



Turbine noise propagating downwind is refracted downwards towards the ground, enhancing long range impact at ground level

Schematic of ray propagation developed using Johns Hopkins University On-line Virtual Laboratory

Wind shear effects on noise propagation



It is noteworthy that under the less common condition of negative wind shear, noise propagation would be **entirely counter-intuitive**

Noise propagation at longer range downwind is refracted upwards into the sky, reducing impact at ground level

Long range noise impact at ground level is now enhanced in the **up-wind**, rather than the **down-wind** direction

This emphasises that sound is not simply 'blown along by the wind'

Schematic of ray propagation developed using Johns Hopkins University On-line Virtual Laboratory

Section 4

Implications for Low Altitude Winds

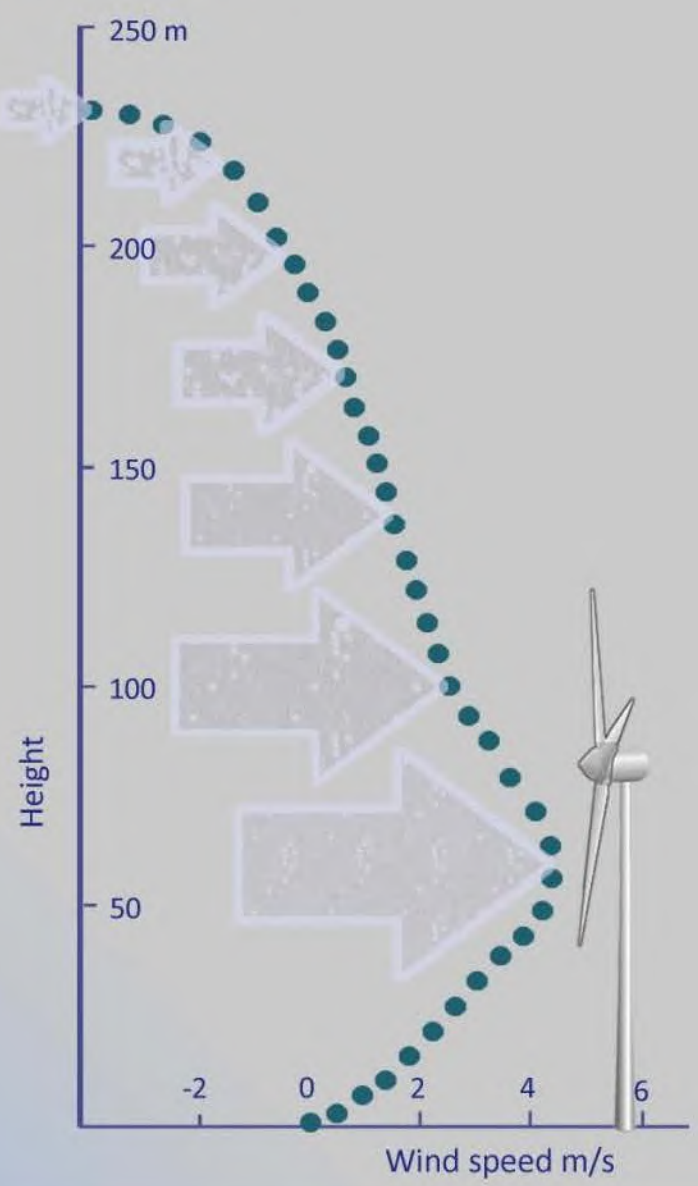
Wind shear effects on noise propagation

One recognised meteorological condition involving a region of negative wind shear is that of a low altitude wind, or 'low-level jet'

A plausible wind speed profile is shown here in relation to the height of a modern wind turbine, illustrating a low level jet with negative wind shear above a height of 50 m

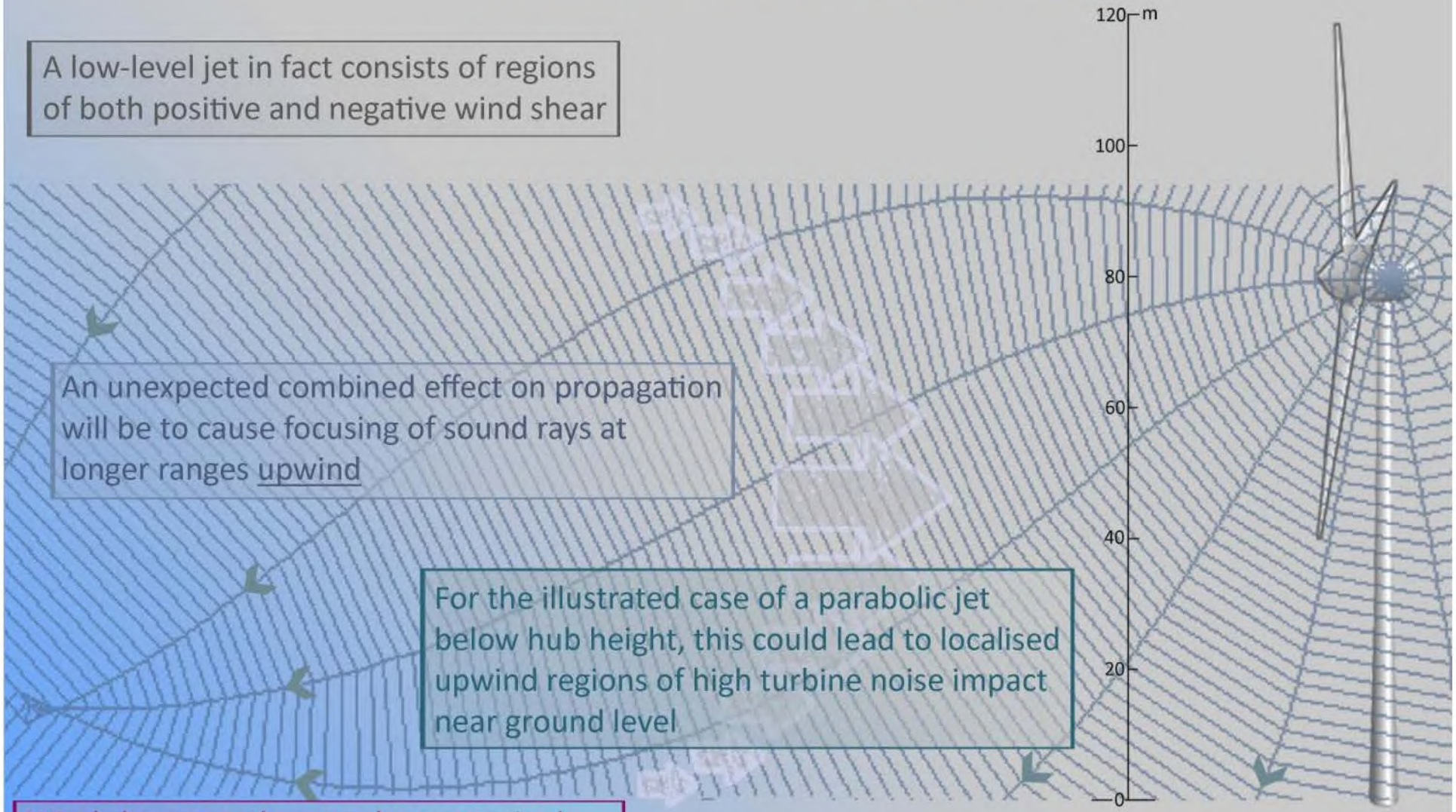
This profile is consistent with measurements presented in a study of road traffic noise propagation in the USA

See Ovenden, Shaffer and Fernando: 'Impact of meteorological conditions on noise propagation from freeway corridors' Journal of the Acoustical Society of America, 126 (1), July 2009



Wind shear effects on noise propagation

A low-level jet in fact consists of regions of both positive and negative wind shear



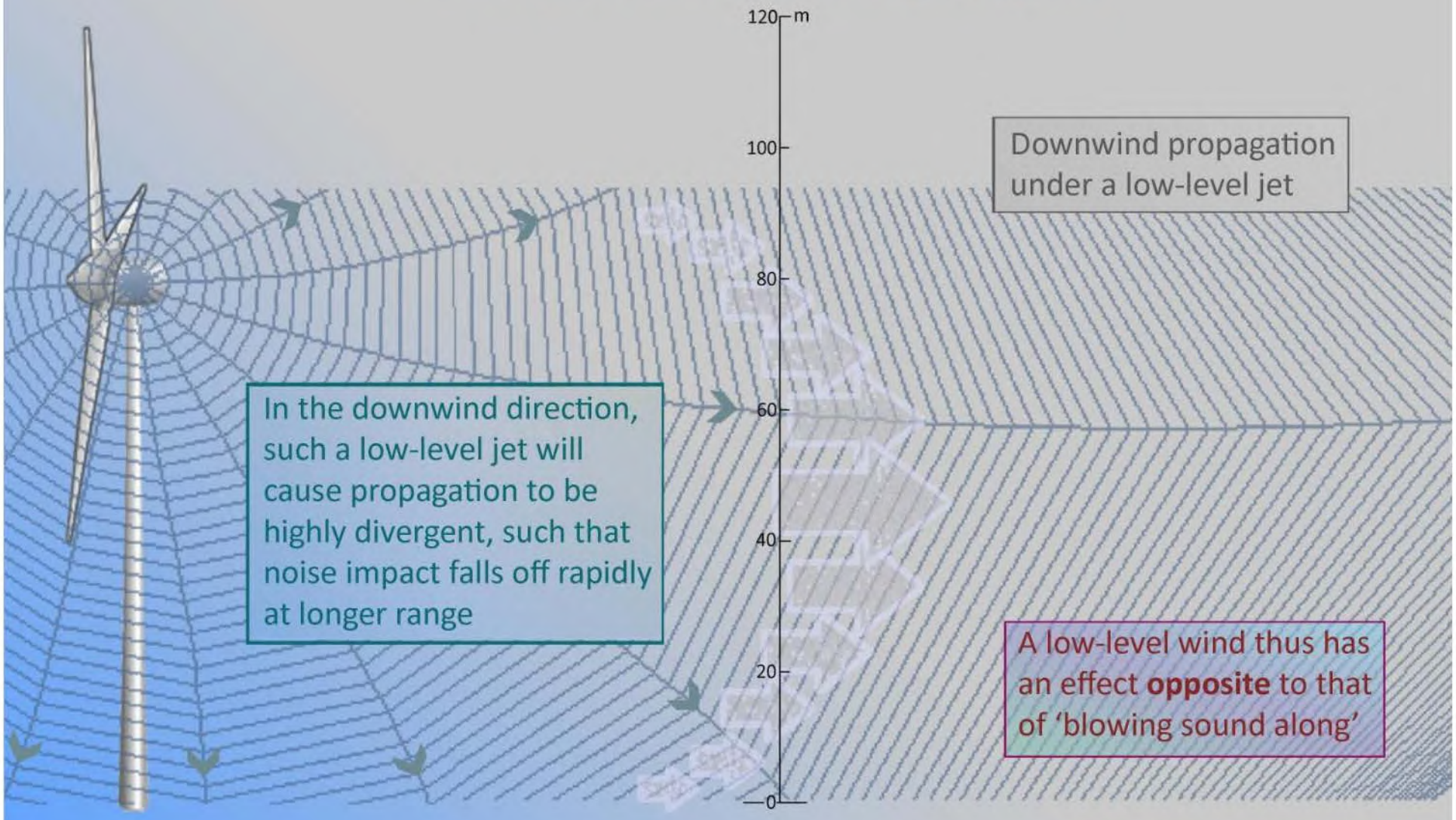
An unexpected combined effect on propagation will be to cause focusing of sound rays at longer ranges upwind

For the illustrated case of a parabolic jet below hub height, this could lead to localised upwind regions of high turbine noise impact near ground level

Wind shear can thus produce seemingly anomolous behaviour under certain well-recognised meteorological conditions

Schematic of ray propagation developed using Johns Hopkins University On-line Virtual Laboratory

Wind shear effects on noise propagation



Schematic of ray propagation developed using Johns Hopkins University On-line Virtual Laboratory

Section 5

Wind Shear in Practice

Wind shear in practice

Wind shear varies significantly and systematically over the course of 24 hours, according to the meteorological condition of the atmosphere

Whilst positive wind shear is the normal condition, zero or negative wind shear can occur in practice, as made clear in the 'Acoustic Bulletin Agreement' of April 2009:

...."On some sites and in some wind conditions the situation may arise that the wind speed U_1 (at the greater height H_1) is equal to or lower than the wind speed U_2 at the lower height H_2."

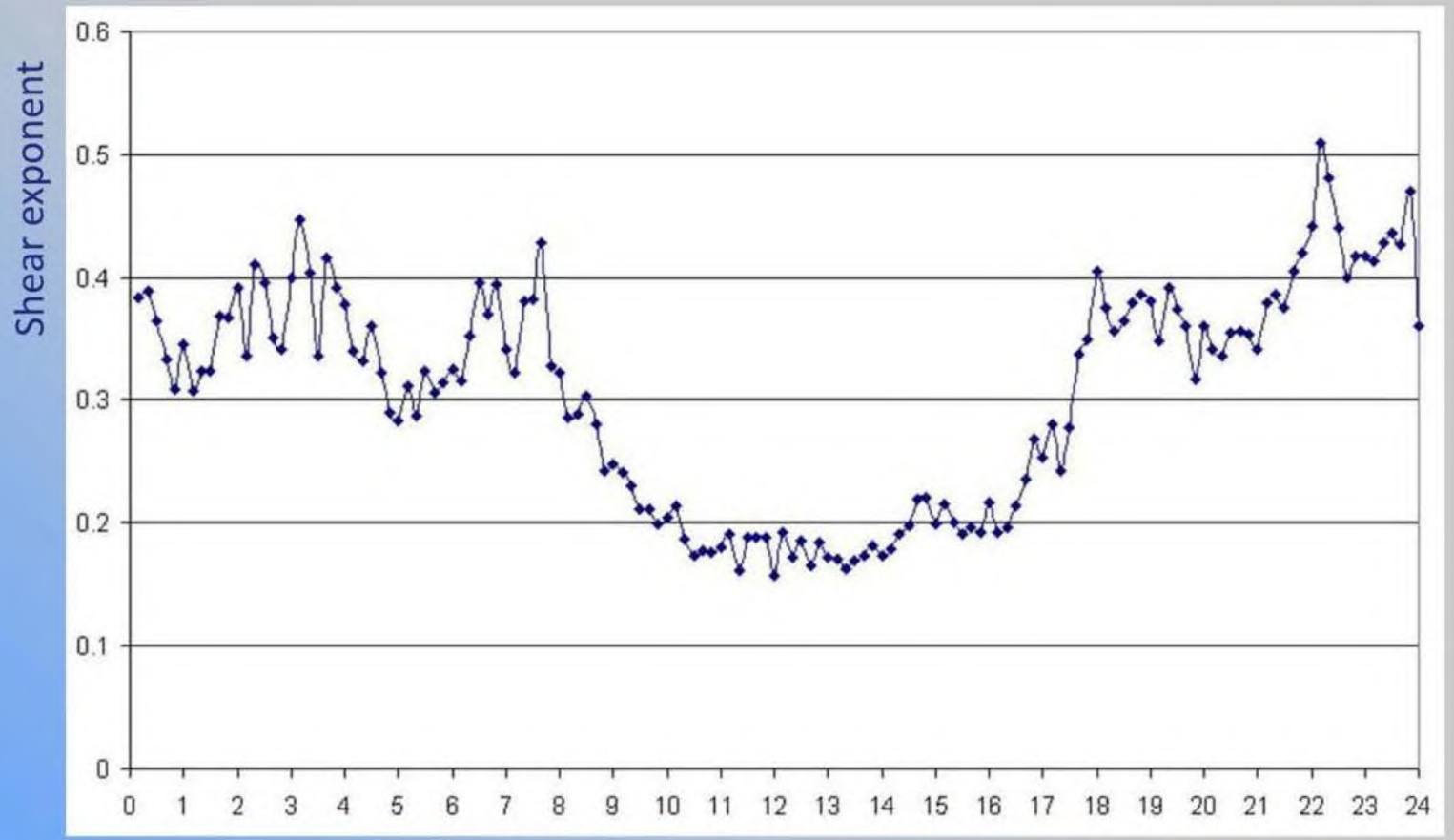
The following illustrations pertain to a proposed wind farm site in Gloucestershire, and show measured diurnal variation in positive wind shear at 60 to 70 m height, spanning 3 seasons of the year - each figure represents the average for a different season, taken over a period of at least 6 weeks

The figures are based on developer's tall mast measurements of wind speeds, recorded every 10 minutes at heights of 60 and 71 m, and were accepted as evidence at Public Inquiry

Wind shear in practice

Daily variation in wind shear averaged over 7 weeks in spring

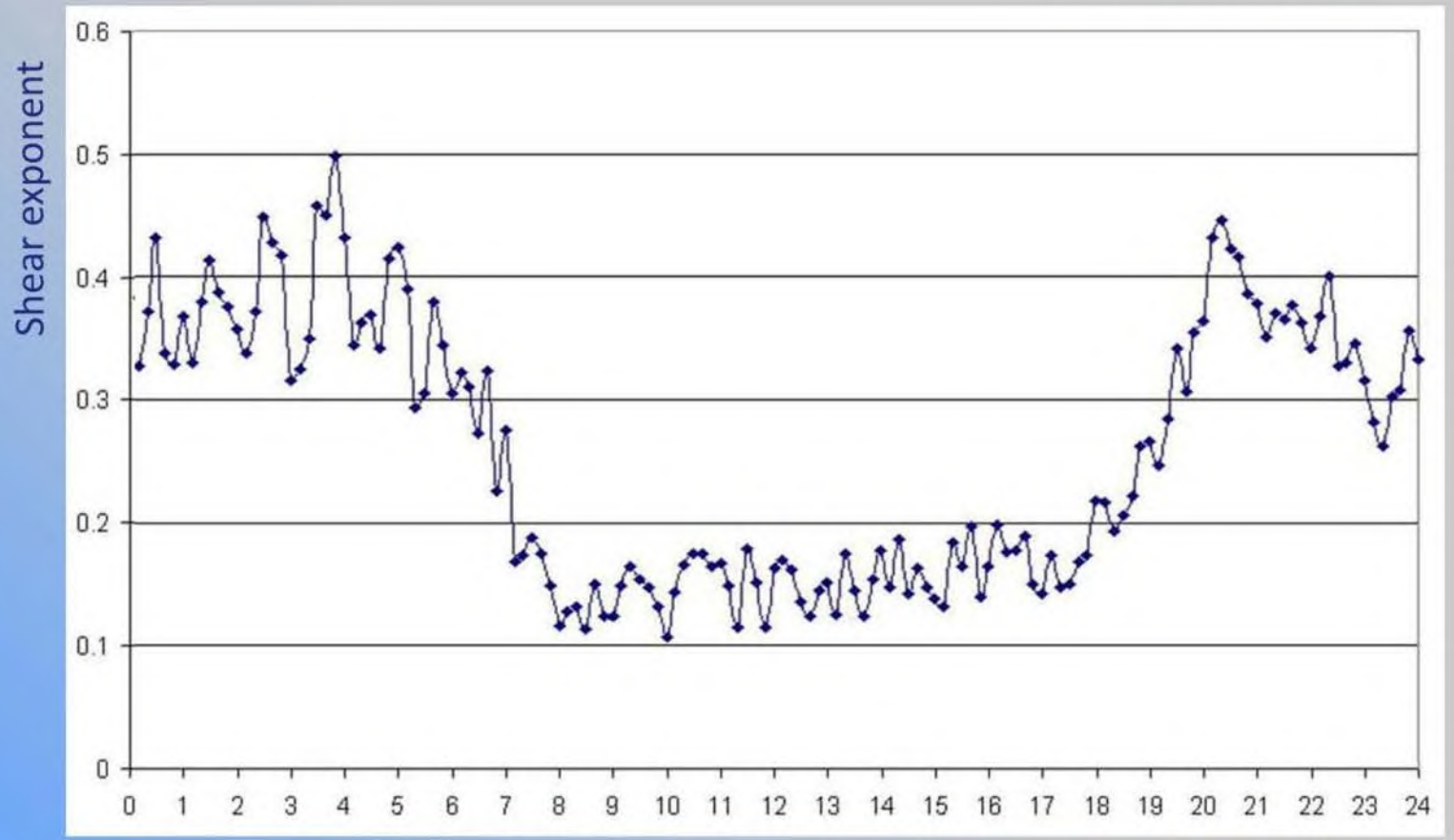
- Berkeley Vale 2010



Wind shear in practice

Daily variation in wind shear averaged over 6 weeks in early summer

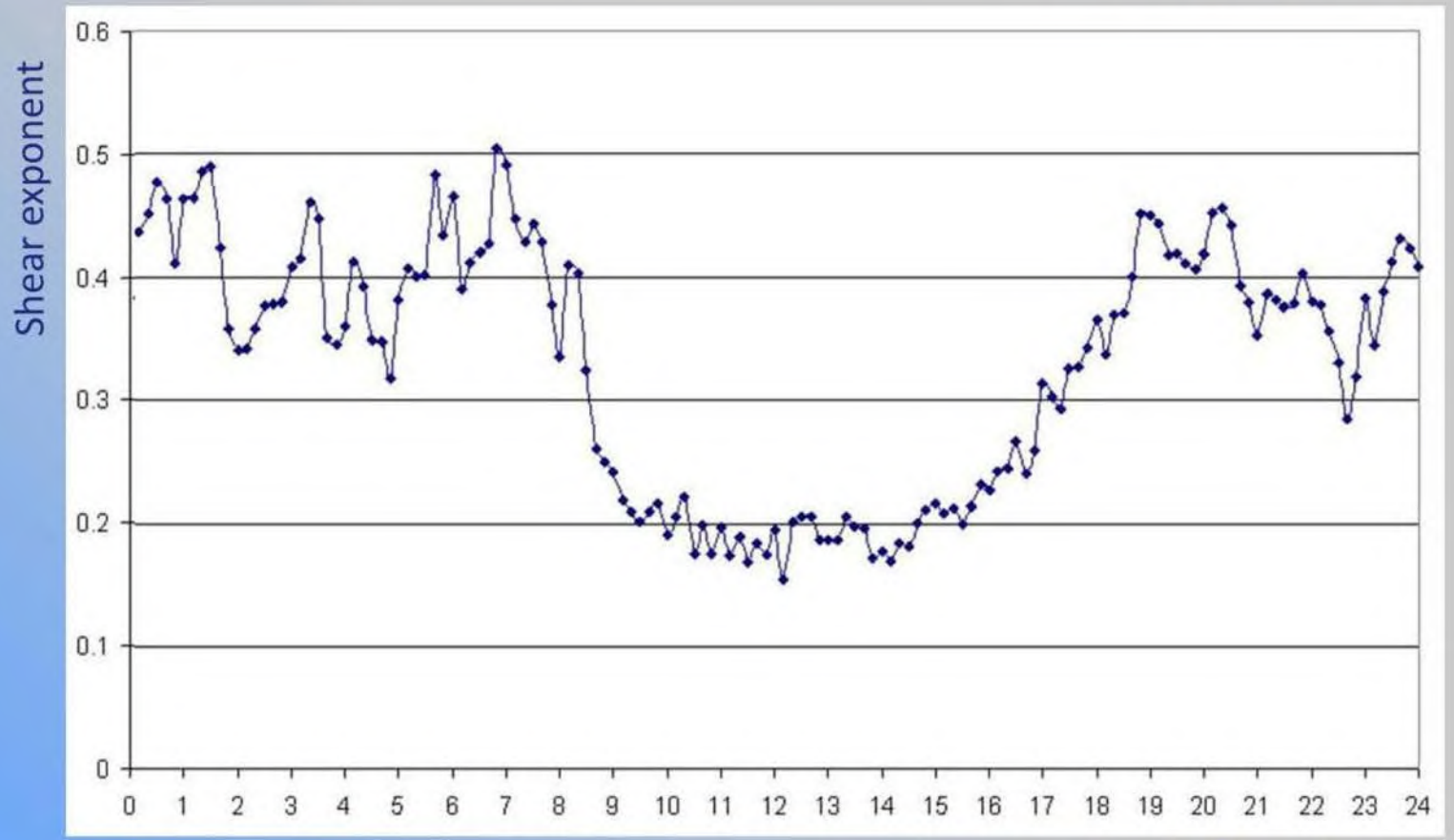
- Berkeley Vale 2010



Wind shear in practice

Daily variation in wind shear averaged over 7 weeks in early autumn

- Berkeley Vale 2010



Wind shear in practice

The above analysis shows systematic daily patterns of very significant wind shear variation at this proposed UK wind farm site

Diurnal variation in wind shear exponent α is strikingly similar across the seasons
- strongest variation is observed in early summer

These results are more extreme than similar observations in a wide-ranging US Department of Energy study, of wind shear in the US Central Plains at heights relevant to modern turbines

See:
Wind shear characteristics at Central Plains tall towers
M. Schwartz and D. Elliott
American Wind Energy Association WindPower 2006 Conference
Pittsburgh, Pennsylvania, June 4–7, 2006

The UK observations of consistently high night-time shears, α = 0.4 to 0.5, recorded over 3 different seasons at a single location, were not encountered in the US study covering the entire length of America

Section 6

Implications of Wind Shear Variation

(i) Overview

Implications of wind shear variation

Owing to the effects of refraction, this significant pattern of daily wind shear variation will cause large variations in turbine noise propagation and subsequent impact at receptors

Crucially, excursions in received turbine noise levels under varying wind shear conditions will particularly predispose to complaints

This is shown by following analysis of IoA proposed implementation of ETSU-R-97 approach to noise impact assessment:

Receptor X

Section 6

Implications of Wind Shear Variation

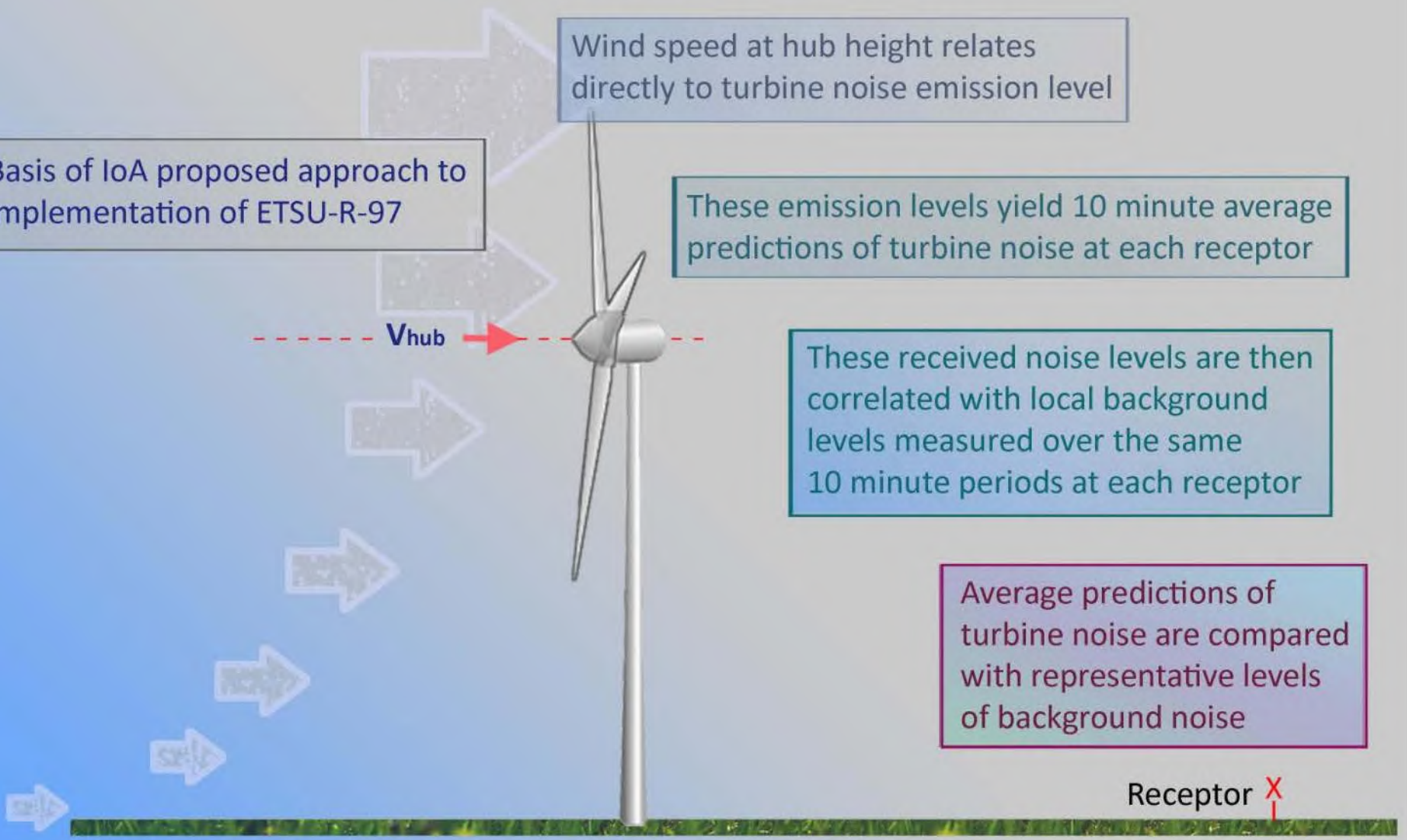
(ii) IoA proposed approach to implementation of ETSU-R-97

Implications of wind shear variation

Wind speed at hub height relates directly to turbine noise emission level

Basis of IoA proposed approach to implementation of ETSU-R-97

These emission levels yield 10 minute average predictions of turbine noise at each receptor



These received noise levels are then correlated with local background levels measured over the same 10 minute periods at each receptor

Average predictions of turbine noise are compared with representative levels of background noise

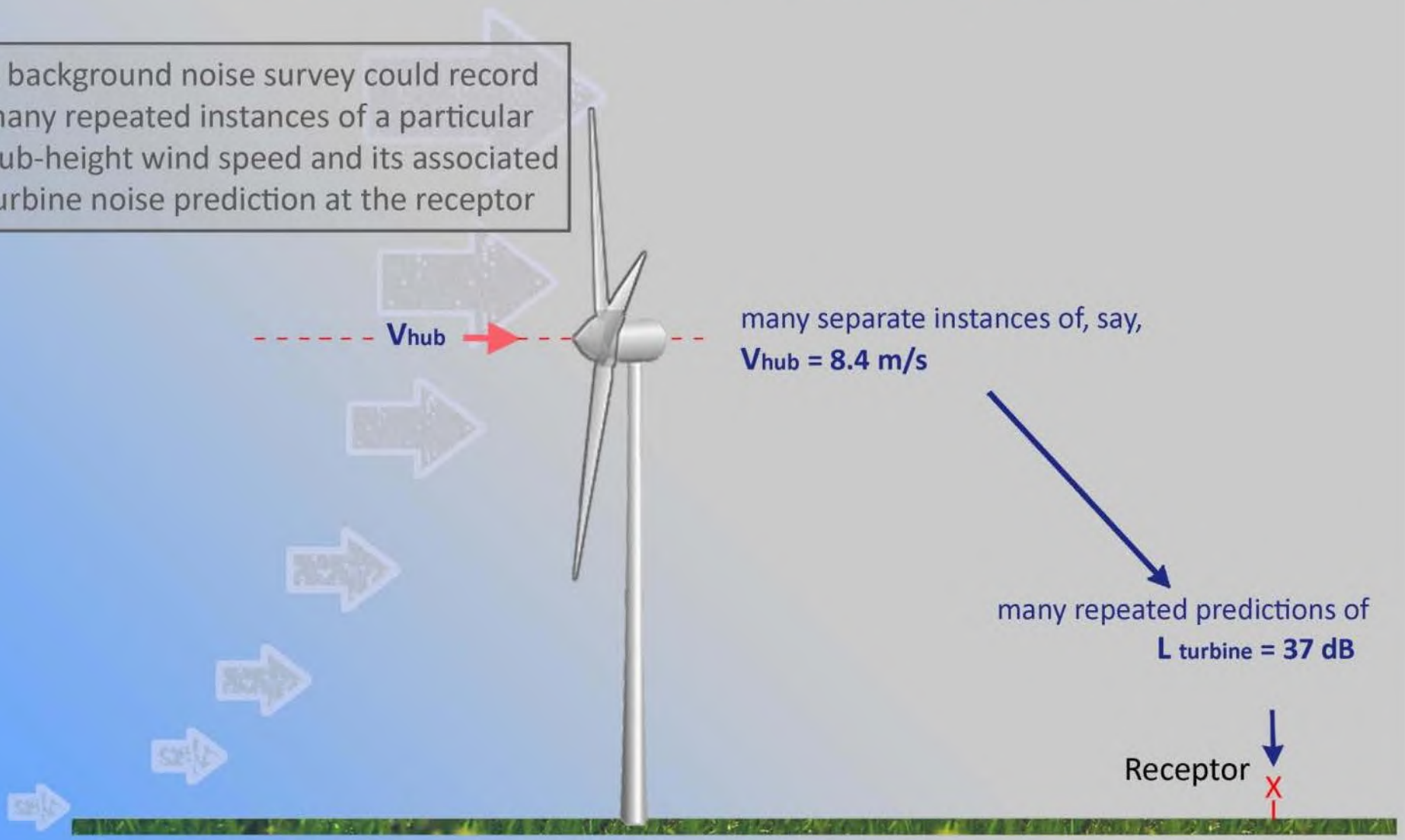
Section 6

Implications of Wind Shear Variation

(iii) Analysis - A

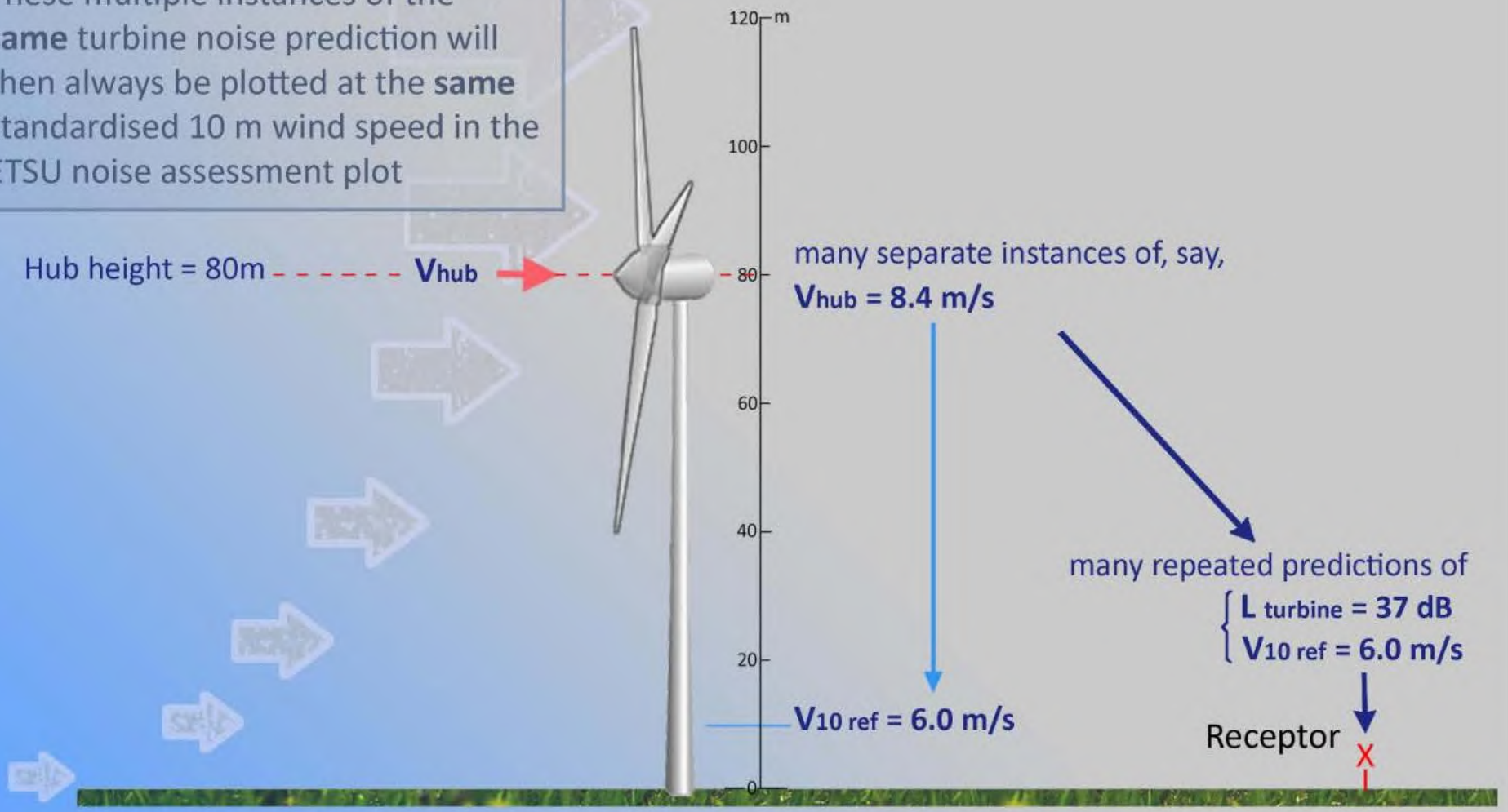
Implications of wind shear variation for noise impact assessment

A background noise survey could record many repeated instances of a particular hub-height wind speed and its associated turbine noise prediction at the receptor

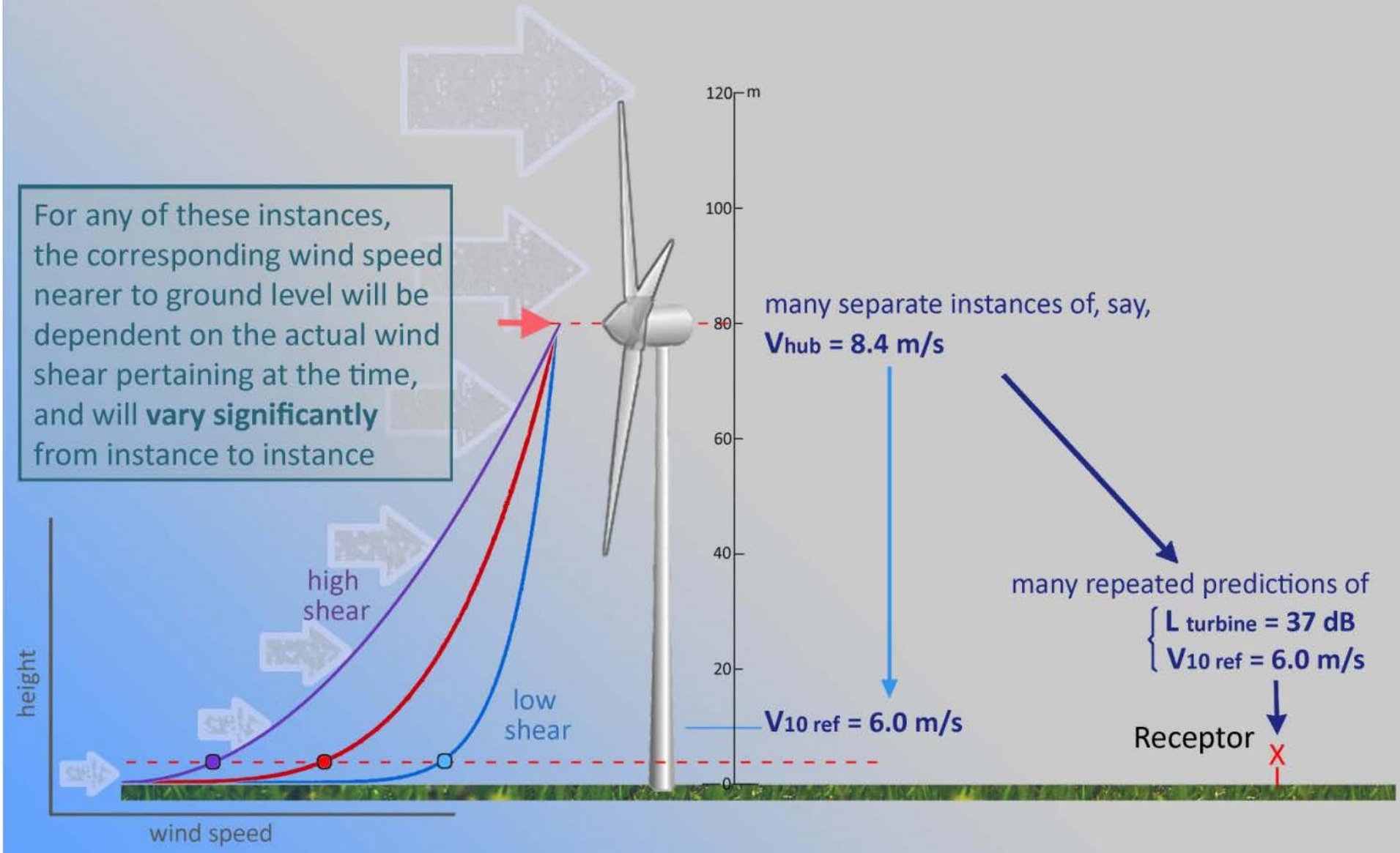


Implications of wind shear variation for noise impact assessment

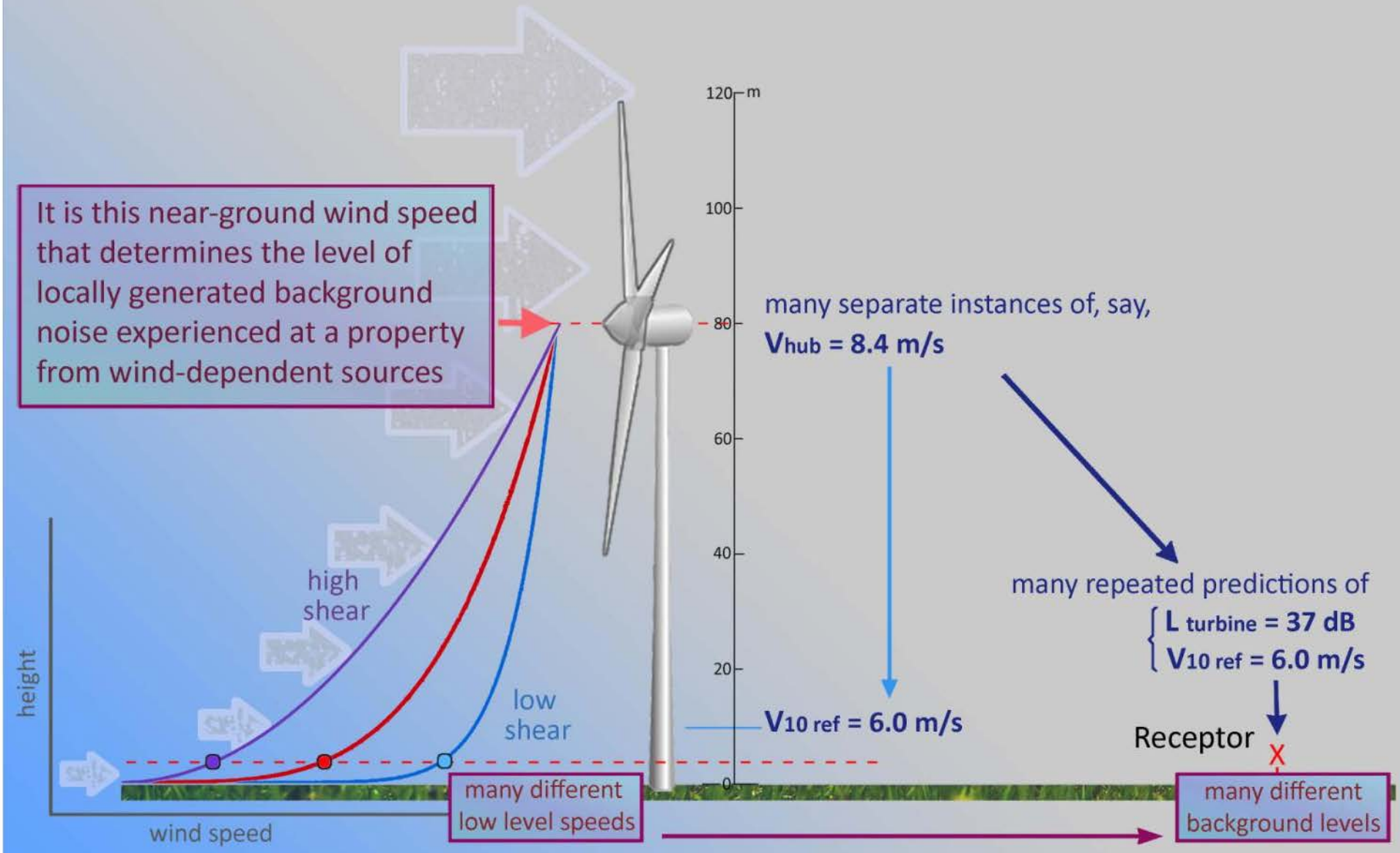
These multiple instances of the **same** turbine noise prediction will then always be plotted at the **same** standardised 10 m wind speed in the ETSU noise assessment plot



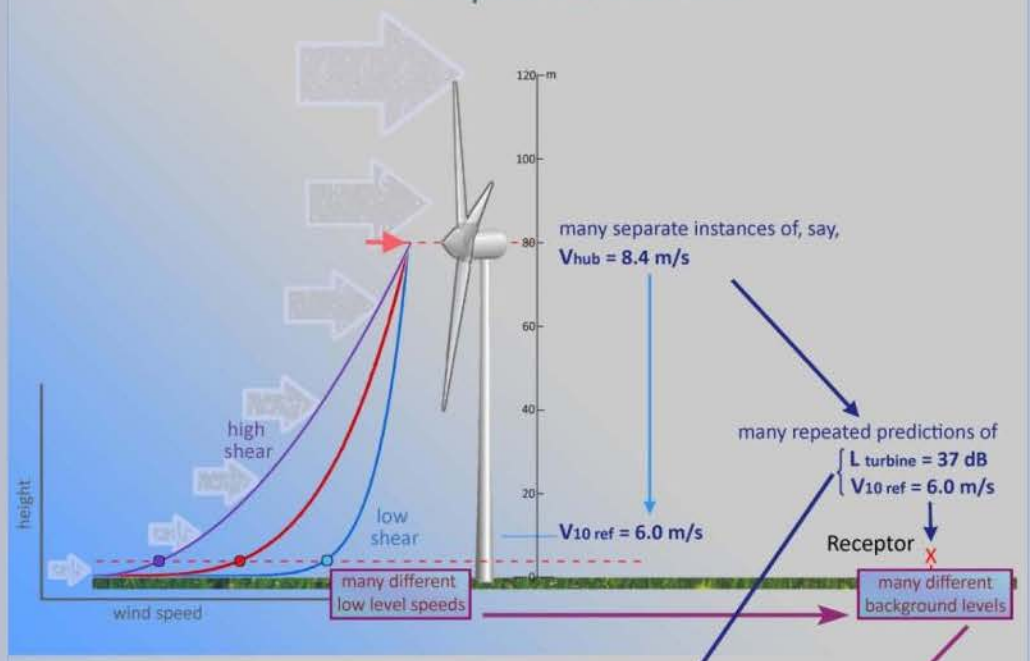
Implications of wind shear variation for noise impact assessment

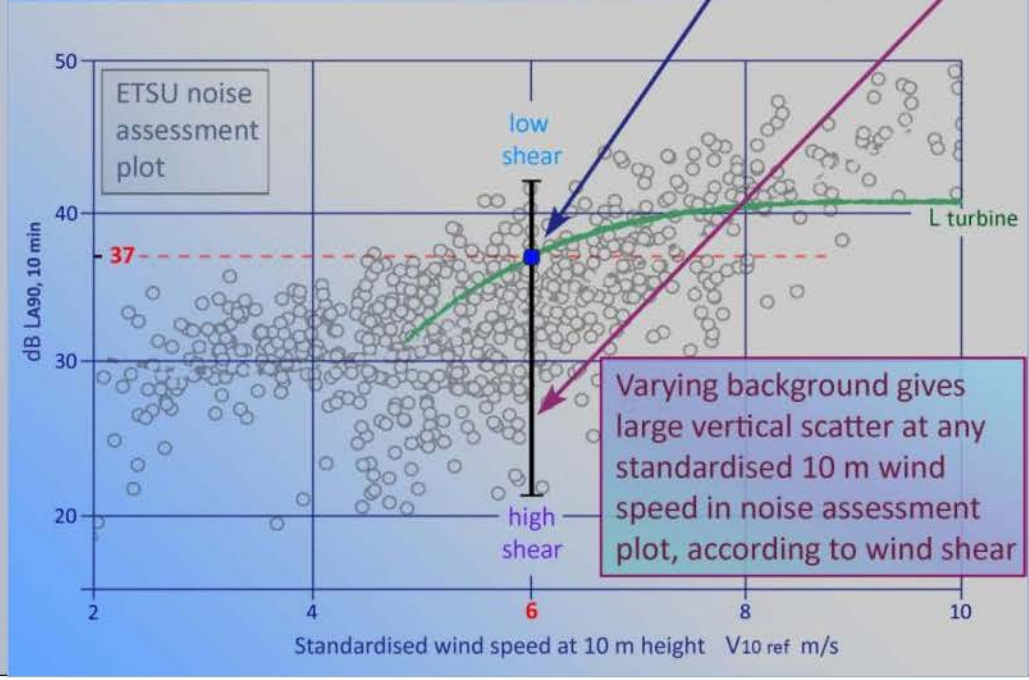


Implications of wind shear variation for noise impact assessment

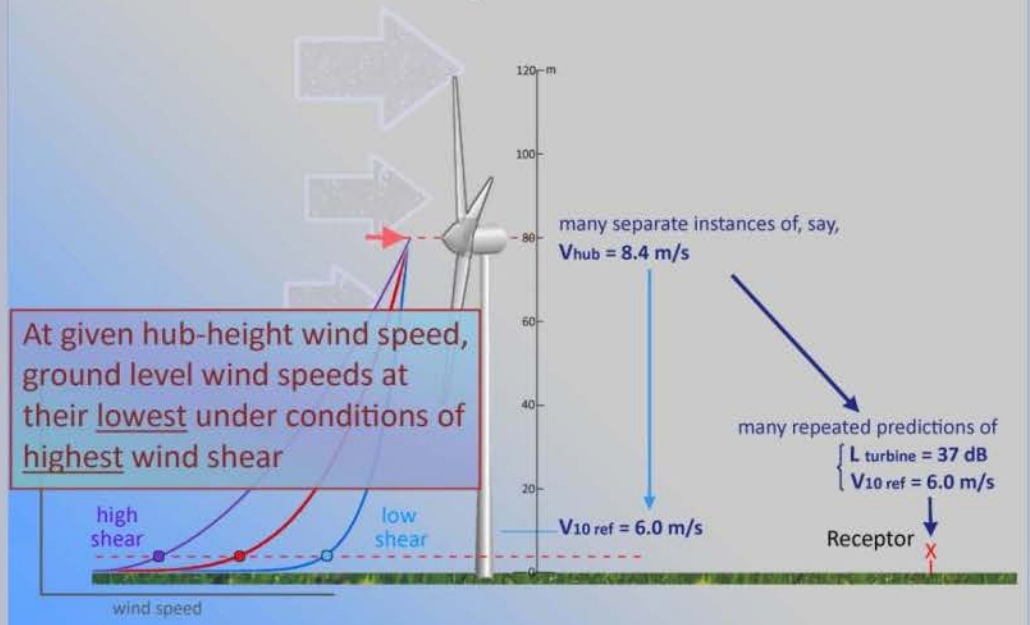


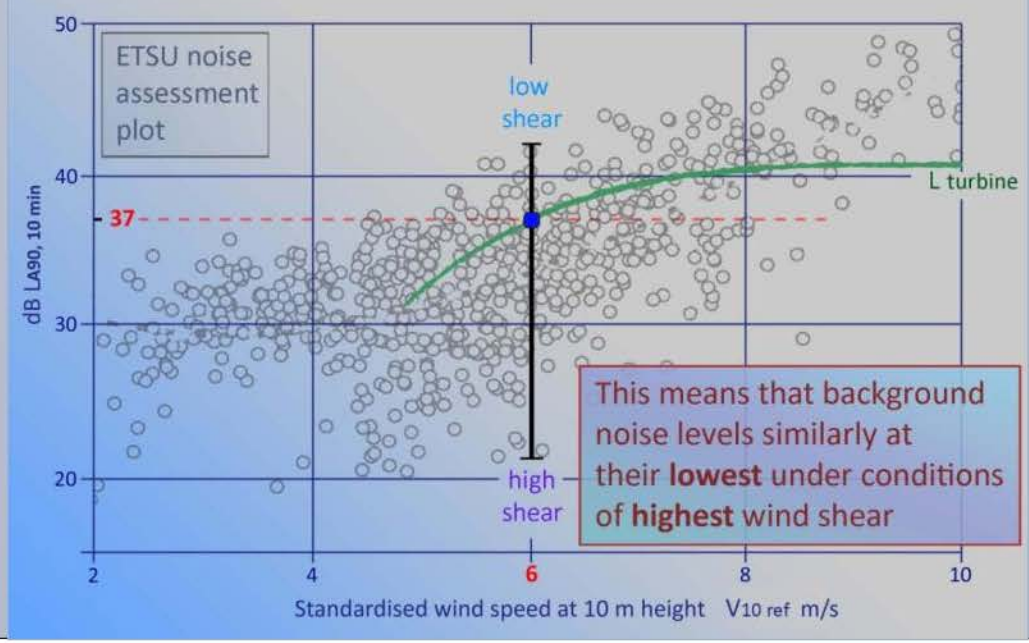
Implications of wind shear variation for noise impact assessment





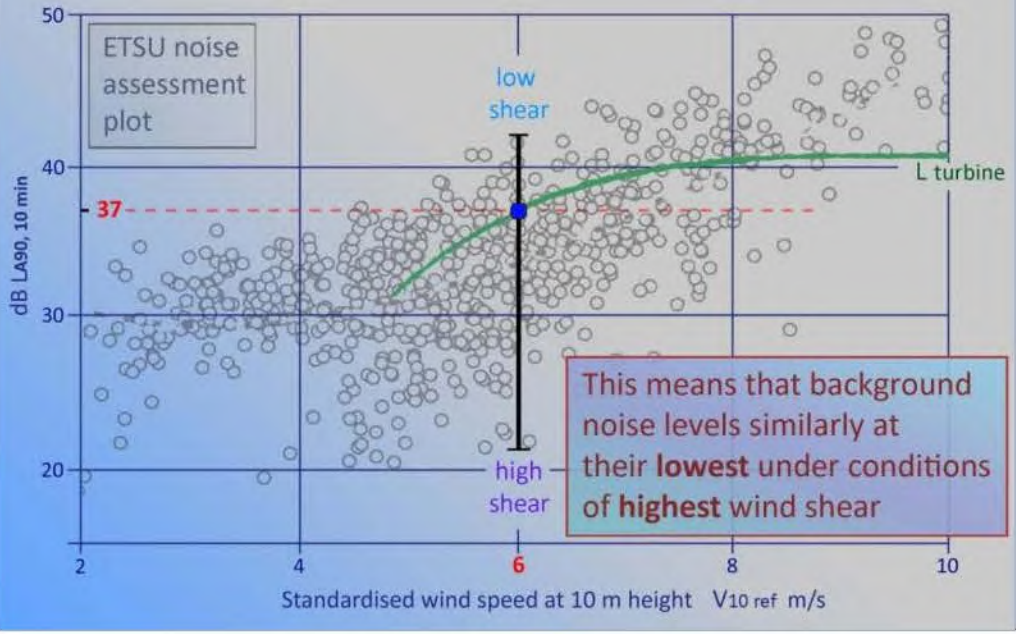
Implications of wind shear variation for noise impact assessment





Implications of wind shear variation for noise impact assessment

Focusing attention on the ETSU noise assessment plot below:

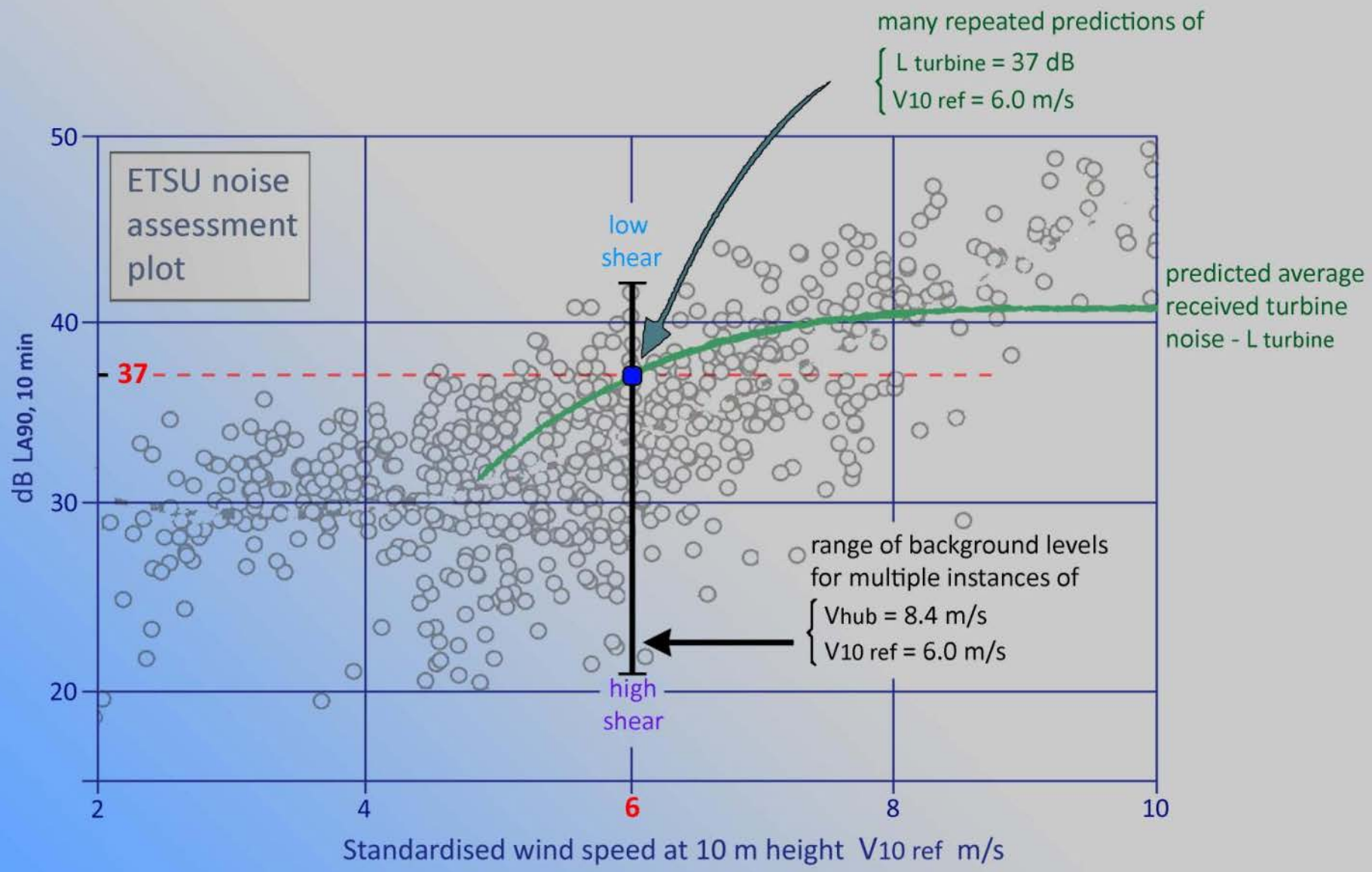


Section 6

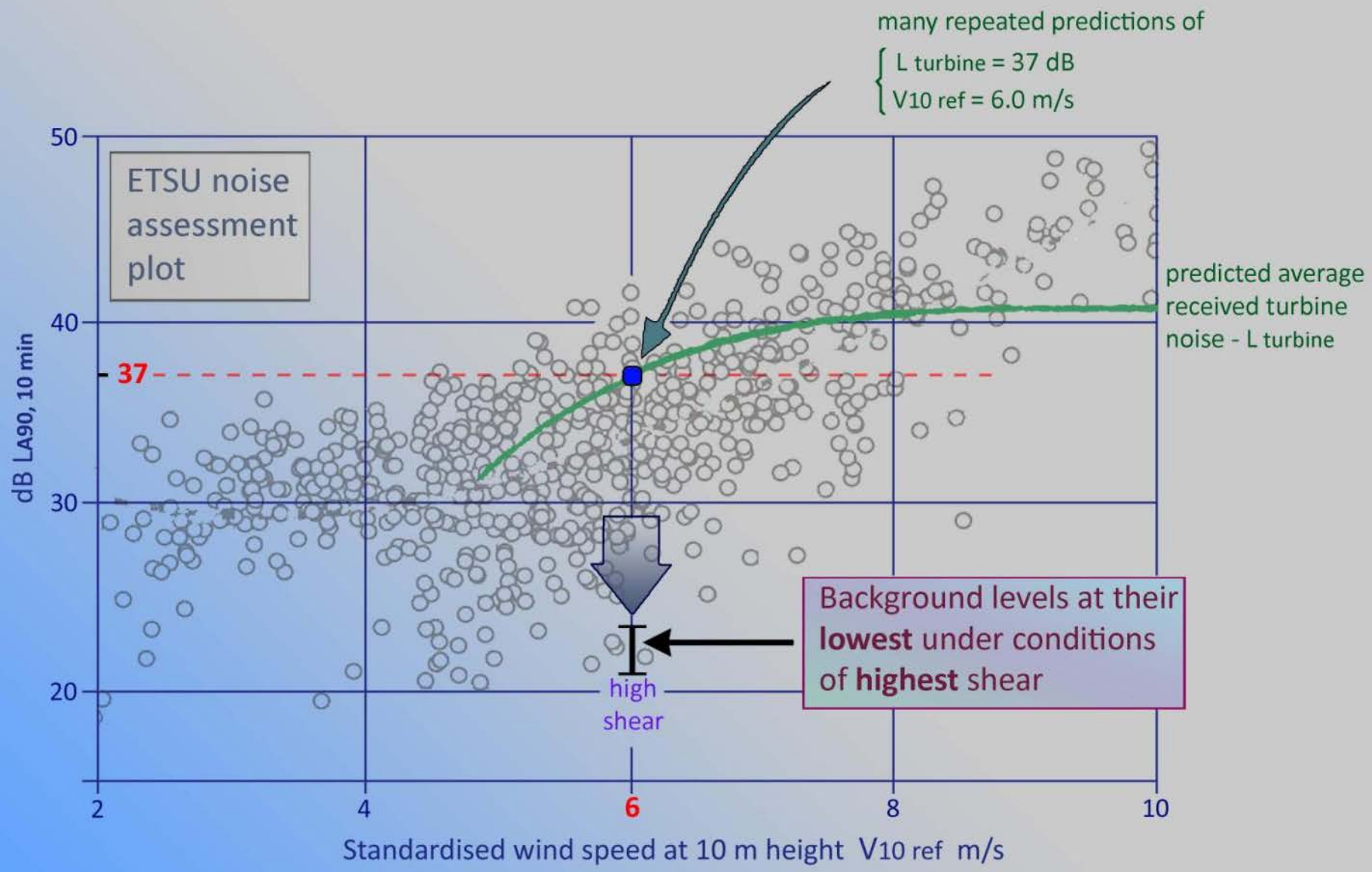
Implications of Wind Shear Variation

(iv) Analysis - B

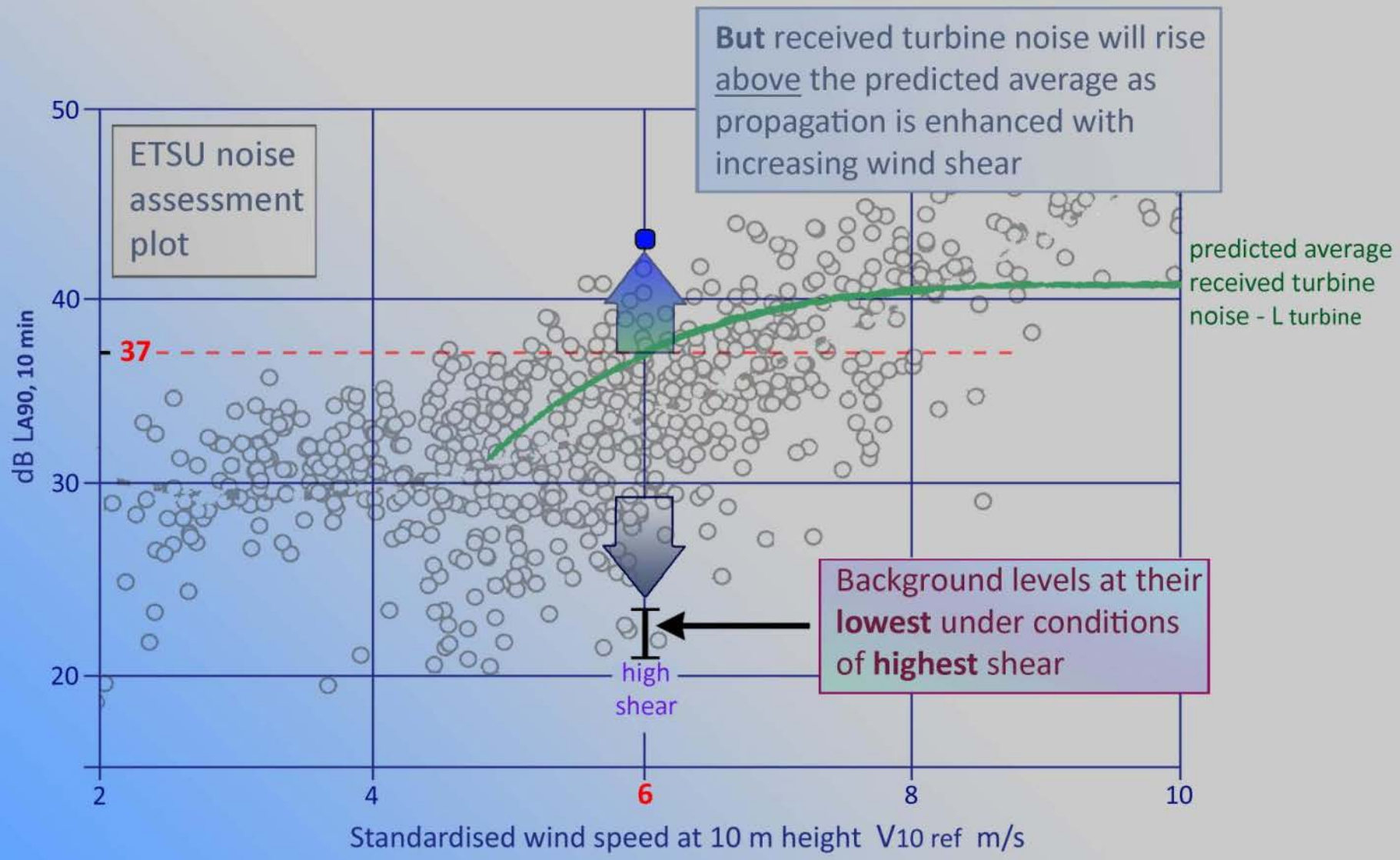
Implications of wind shear variation for noise impact assessment



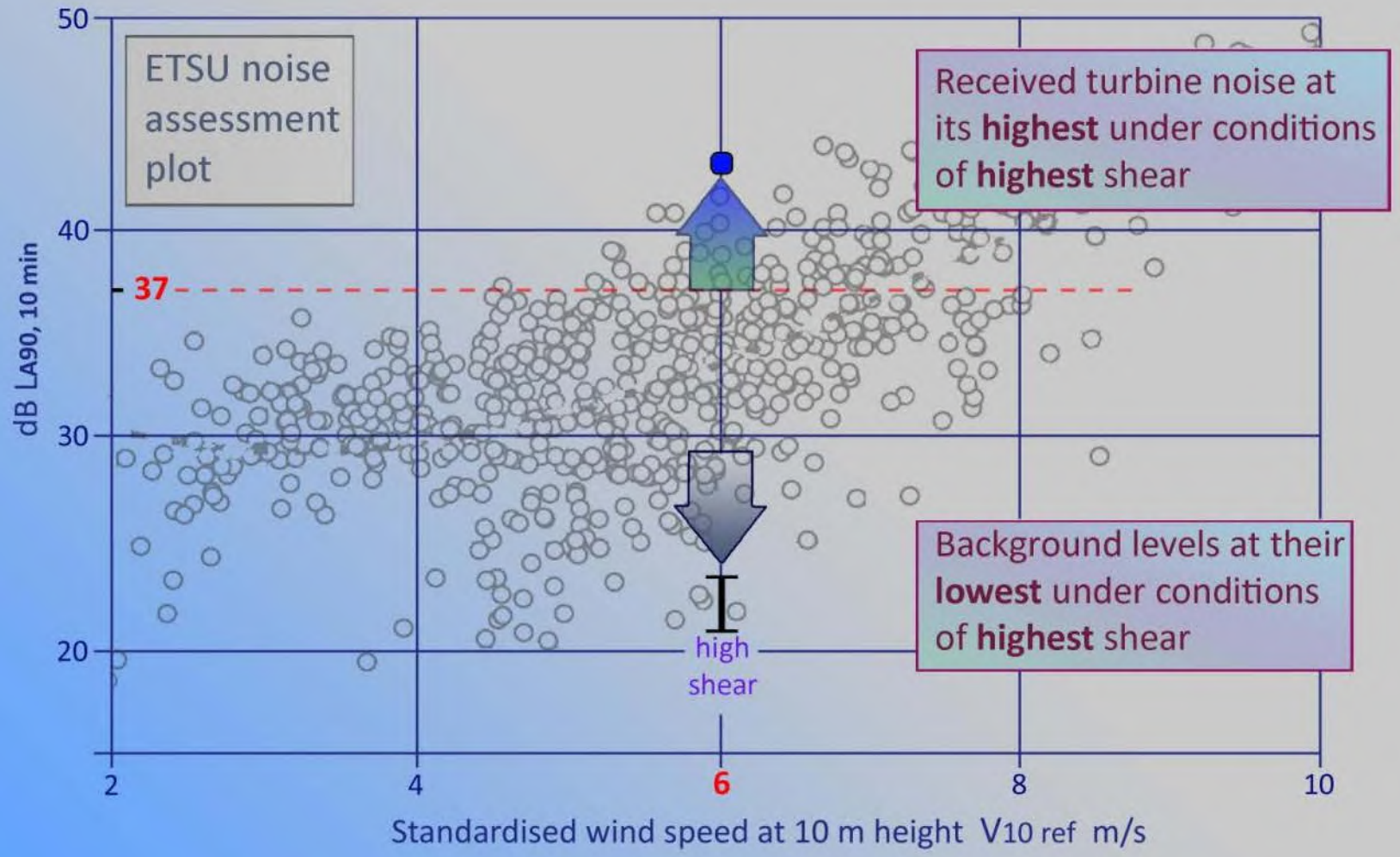
Implications of wind shear variation for noise impact assessment



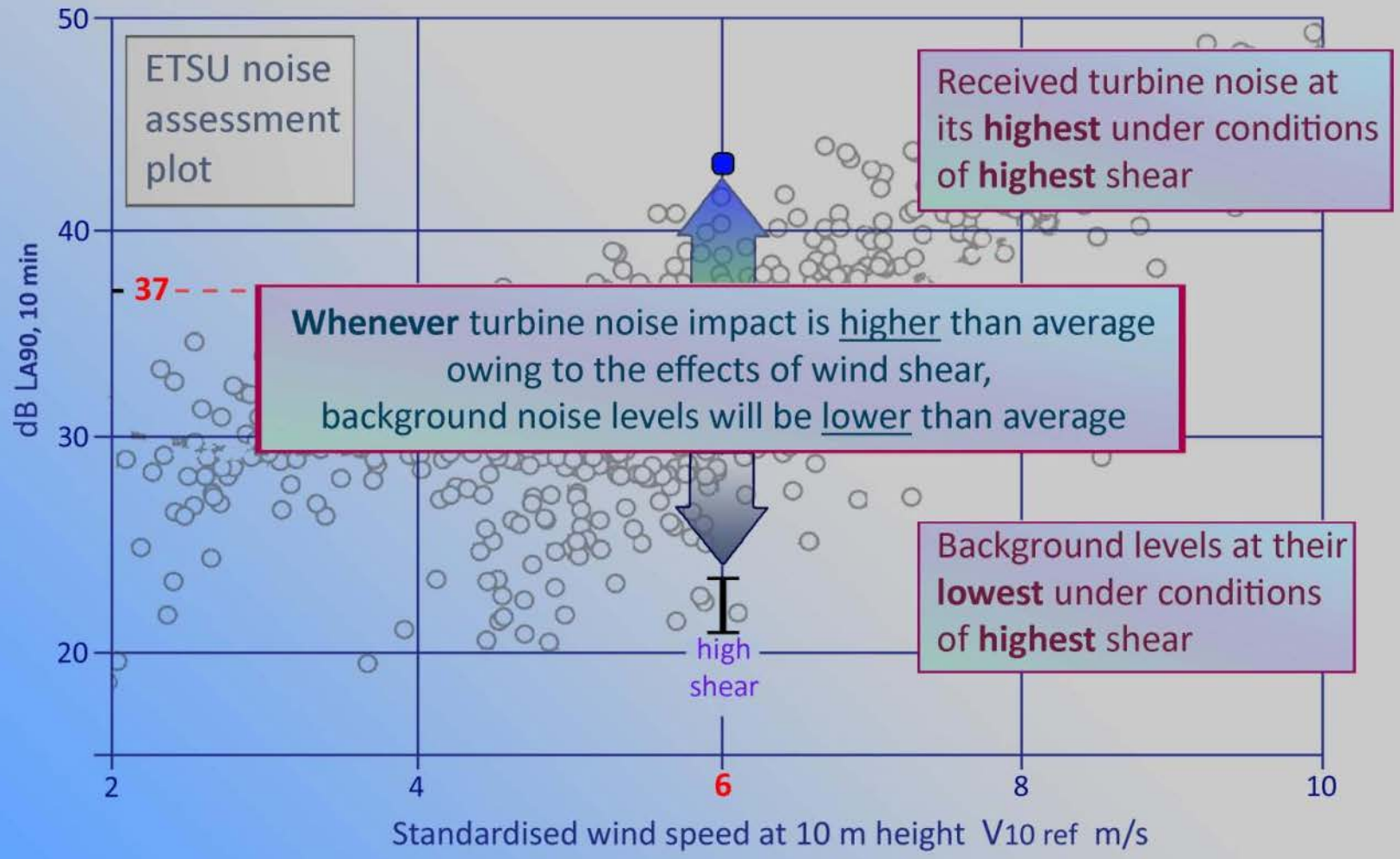
Implications of wind shear variation for noise impact assessment



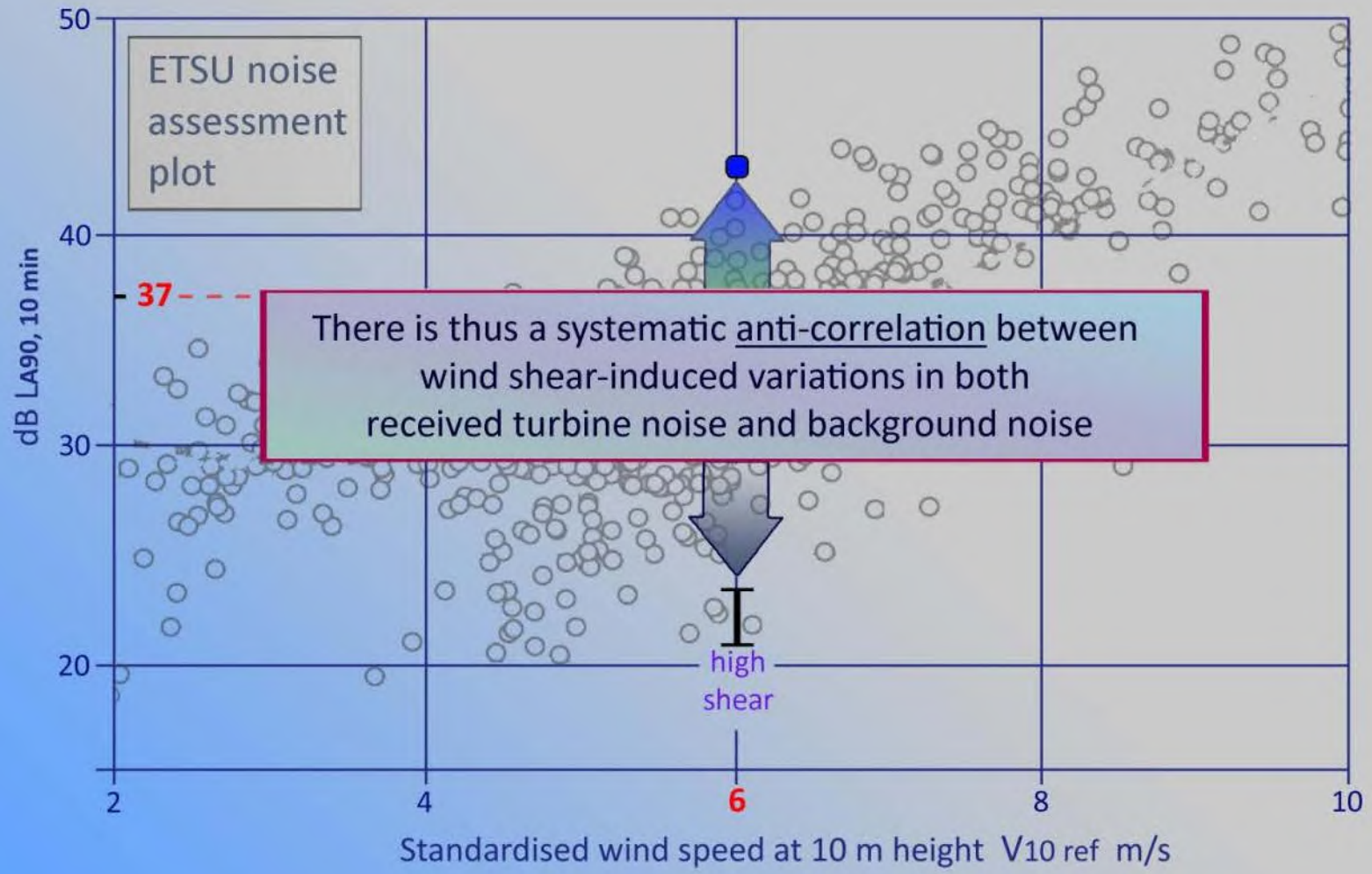
Implications of wind shear variation for noise impact assessment



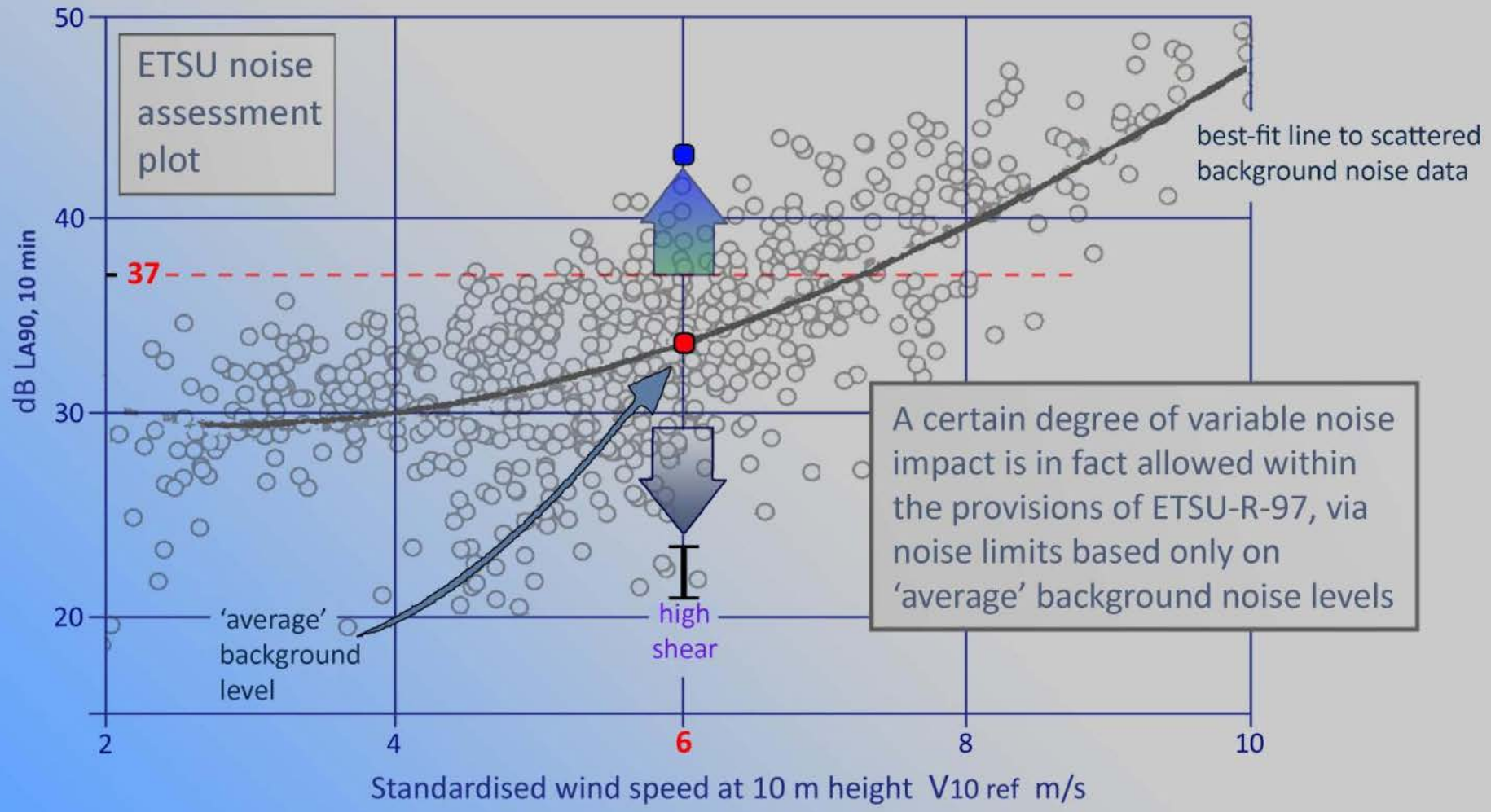
Implications of wind shear variation for noise impact assessment



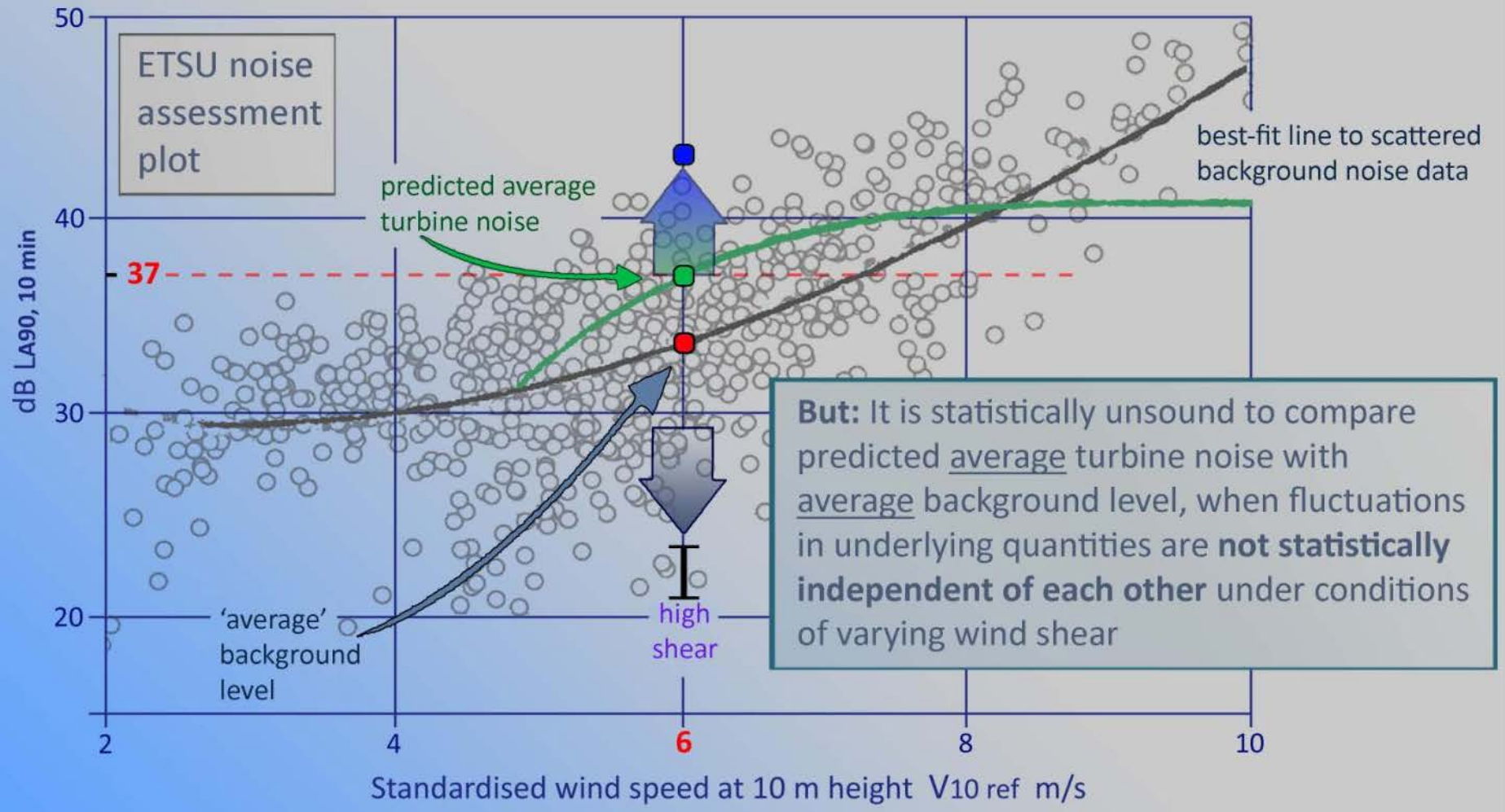
Implications of wind shear variation for noise impact assessment



Implications of wind shear variation for noise impact assessment



Implications of wind shear variation for noise impact assessment



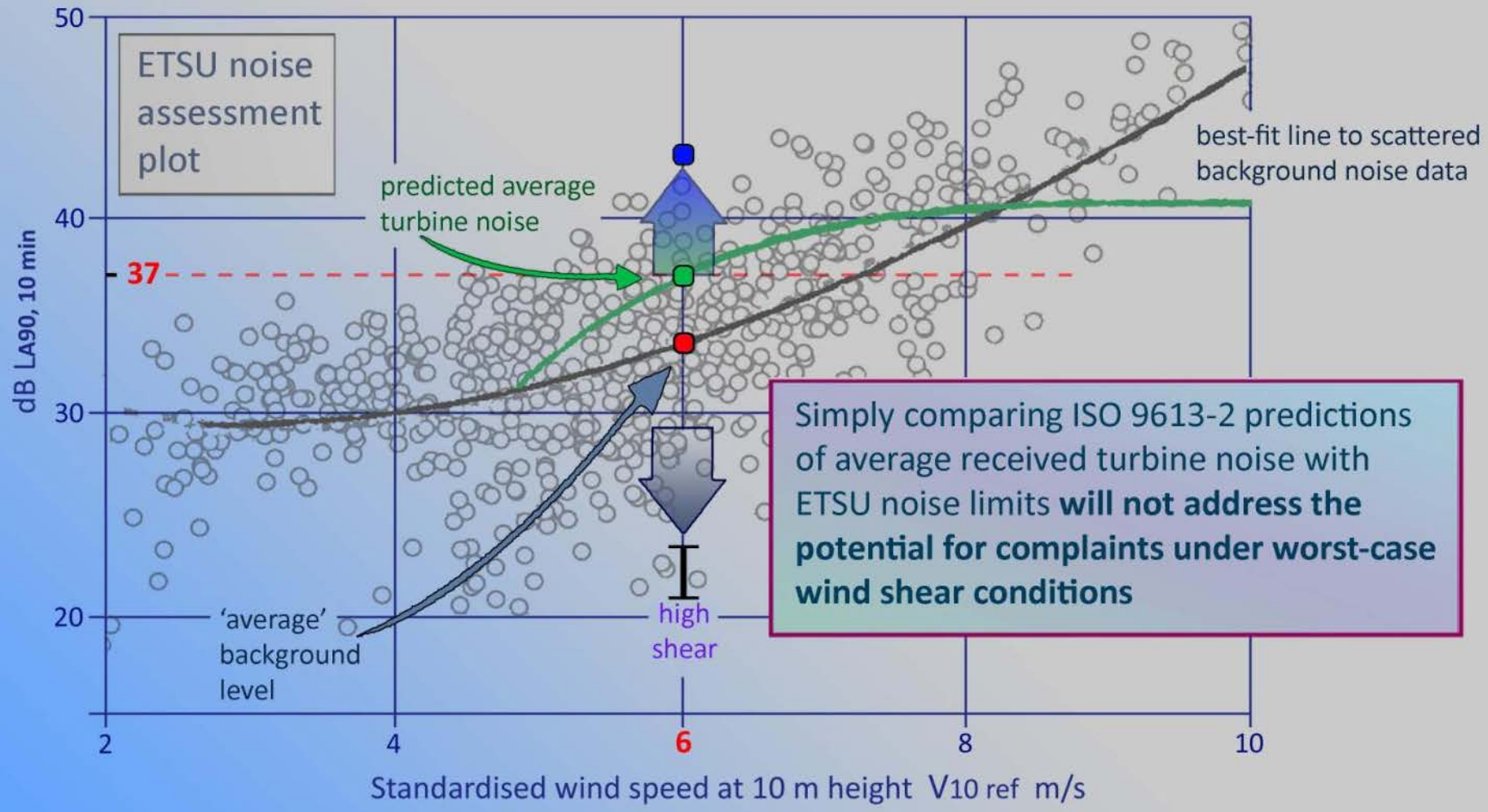
But: It is statistically unsound to compare predicted <u>average</u> turbine noise with <u>average</u> background level, when fluctuations in underlying quantities are **not statistically independent of each other** under conditions of varying wind shear

Section 6

Implications of Wind Shear Variation

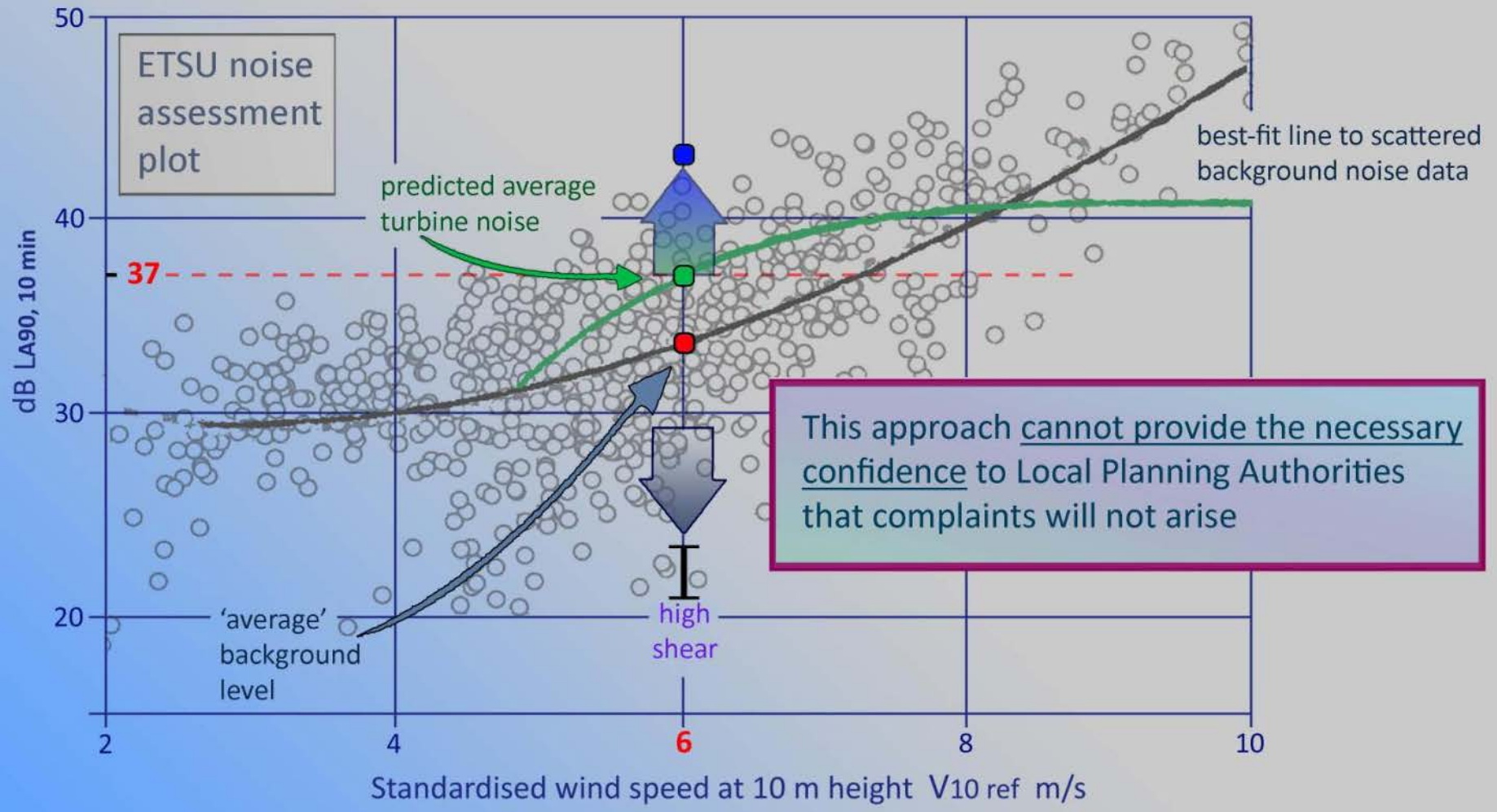
(v) Analysis - conclusions

Implications of wind shear variation for noise impact assessment



Simply comparing ISO 9613-2 predictions of average received turbine noise with ETSU noise limits **will not address the potential for complaints under worst-case wind shear conditions**

Implications of wind shear variation for noise impact assessment



Section 7

Neglect of Wind Shear in Noise Impact Assessment

Neglect of wind shear in noise impact assessment

The major role of wind shear in outdoor noise propagation is not given **explicit** consideration in wind farm noise assessments

Discussion is usually confined to **quite separate** implications of wind shear for generation of turbine noise at hub height and background noise at ground level

Attention is restricted to differences between wind speed at different heights

Developers assume all propagation effects are **covered implicitly** by their use of International Standard ISO 9613-2 noise prediction methodology

This assumption is unjustified:

ISO 9613-2 takes only **limited account** of wind shear effects on propagation, and only from *low height*, *non-wind-dependent*, *stationary* noise sources

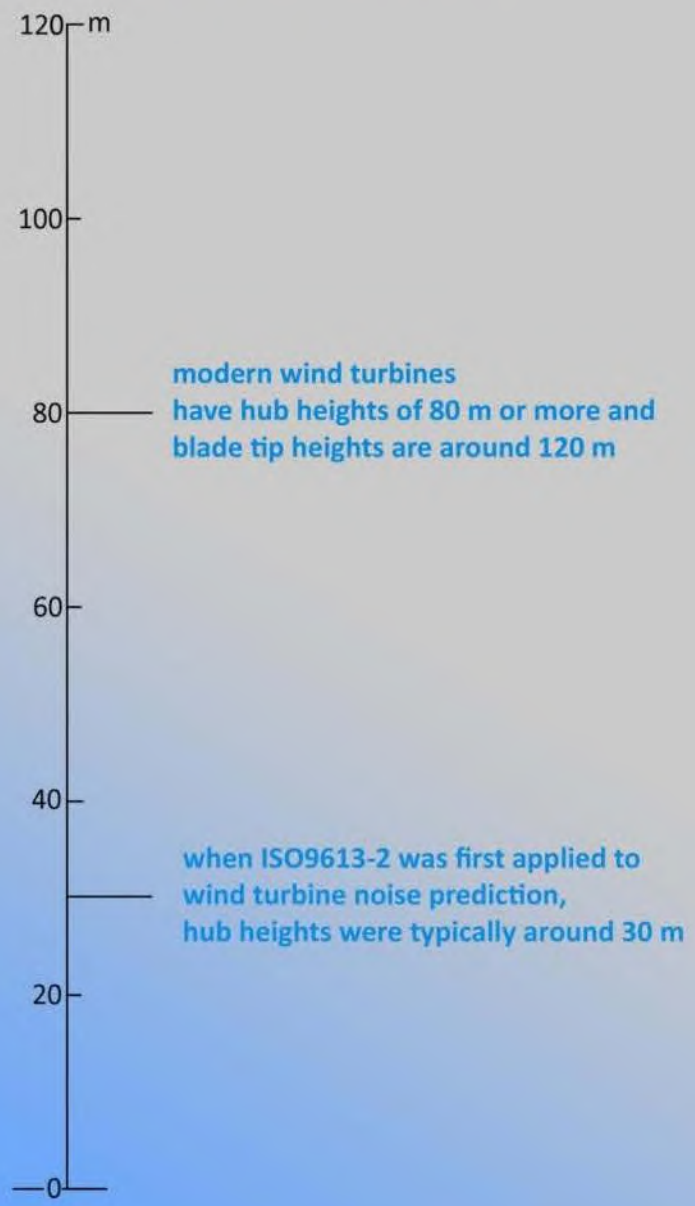
the **degree** of wind shear represented within the standard is not specified

Wider concerns regarding developers' choice and validation of ISO 9613-2, for application to modern, tall wind turbines are detailed below

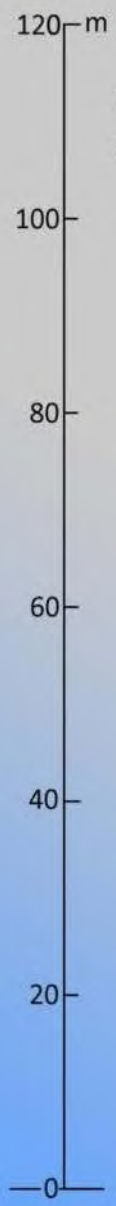
Section 8

ISO 9613-2 – Disparities of Wind Turbine Applications with Original Design Constraints

Present applications of ISO 9613-2 show startling disparities with original design constraints



Present applications of ISO 9613-2 show startling disparities with original design constraints



ISO 9613-2 is a 15 year-old **empirical** scheme

based on:

average noise measurements
from static, near-ground industrial plant

'moderate' downwind conditions

- 10 m height wind speeds up to 5 m/s
- **unspecified wind shear**

validated on:

- a feedstuff plant
- an asphalt plant
- an oil refinery

Present applications of ISO 9613-2 show startling disparities with original design constraints

120 m
100
80
60
40
20
0

ISO 9613-2 is a 15 year-old **empirical** scheme

based on:

average noise measurements from static, near-ground industrial plant

'moderate' downwind conditions

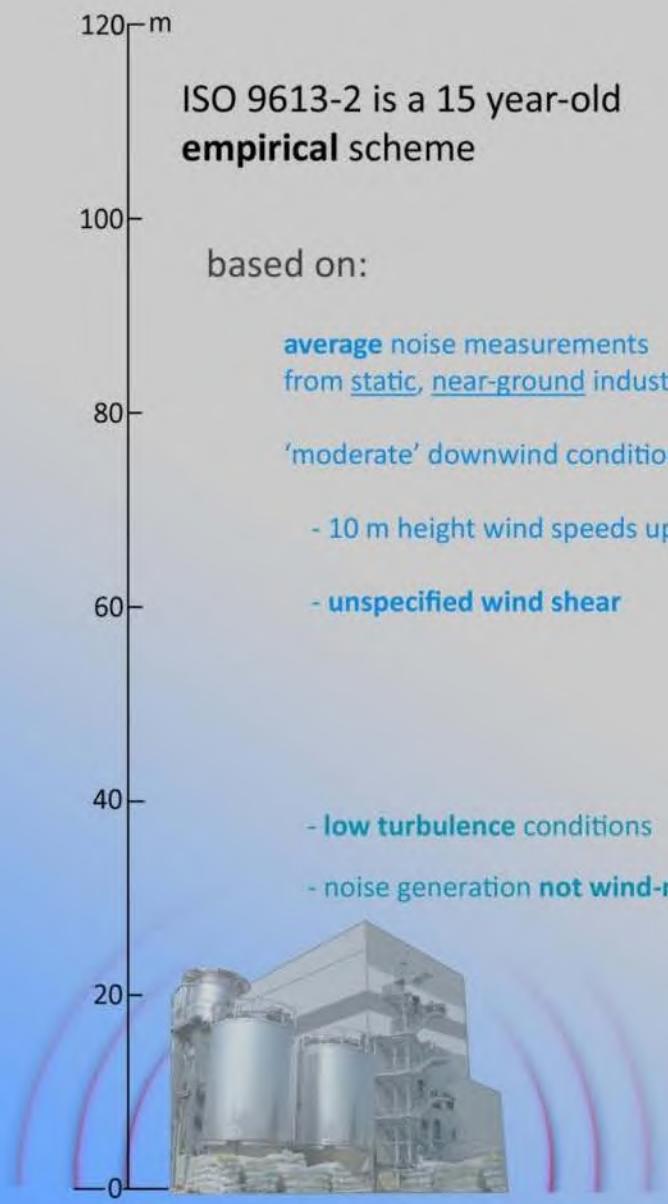
- 10 m height wind speeds up to 5 m/s
- **unspecified wind shear**

- a feedstuff plant
- an asphalt plant
- an oil refinery

Food processing plant

- height around 25 m (84 ft)

Present applications of ISO 9613-2 show startling disparities with original design constraints



ISO 9613-2 is a 15 year-old **empirical** scheme

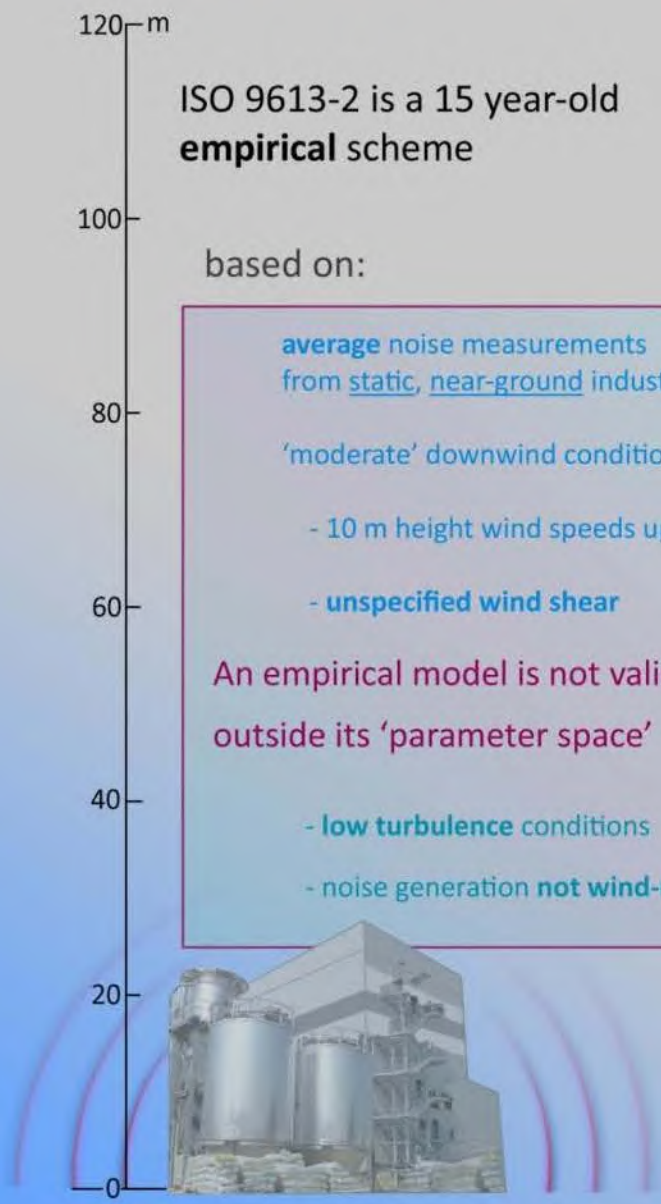
based on:

average noise measurements from static, near-ground industrial plant

'moderate' downwind conditions

- 10 m height wind speeds up to 5 m/s
- **unspecified wind shear**
- **low turbulence** conditions
- noise generation **not wind-related**

Present applications of ISO 9613-2 show startling disparities with original design constraints



ISO 9613-2 is a 15 year-old **empirical** scheme

based on:

average noise measurements from static, near-ground industrial plant

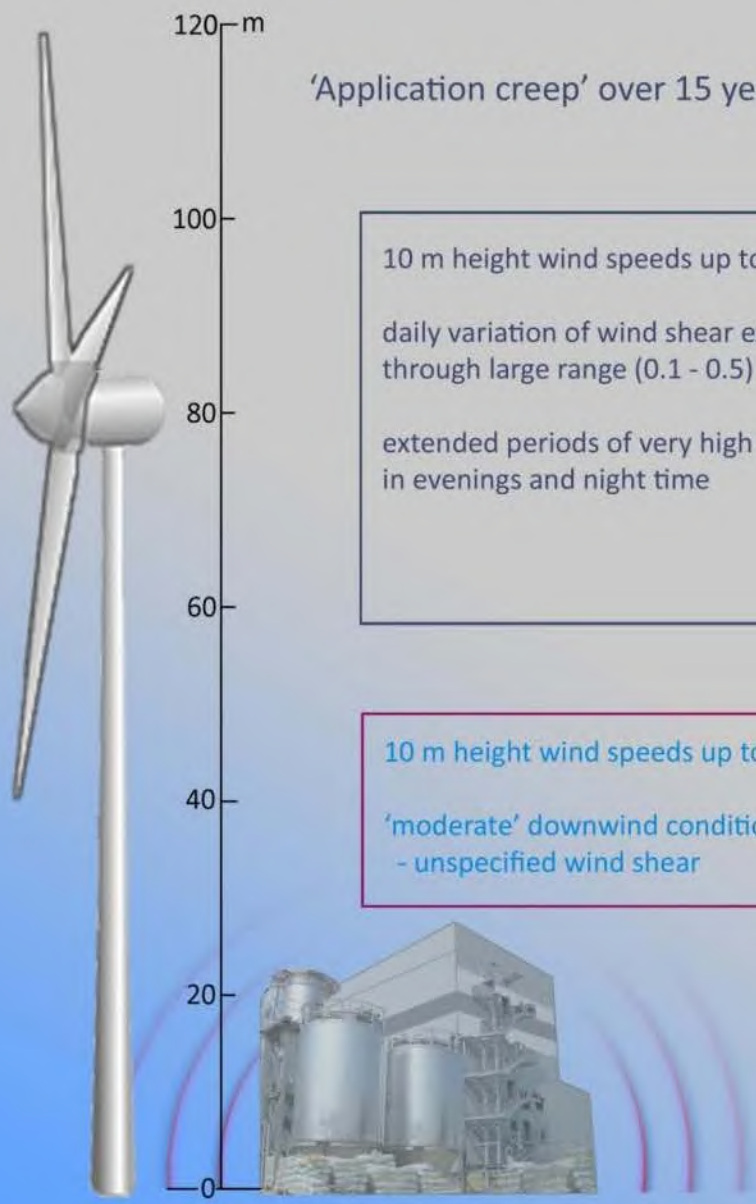
'moderate' downwind conditions

- 10 m height wind speeds up to 5 m/s
- **unspecified wind shear**

An empirical model is not valid outside its 'parameter space'

- **low turbulence** conditions
- noise generation **not wind-related**

Present applications of ISO 9613-2 show startling disparities with original design constraints



'Application creep' over 15 years:

10 m height wind speeds up to 10 m/s

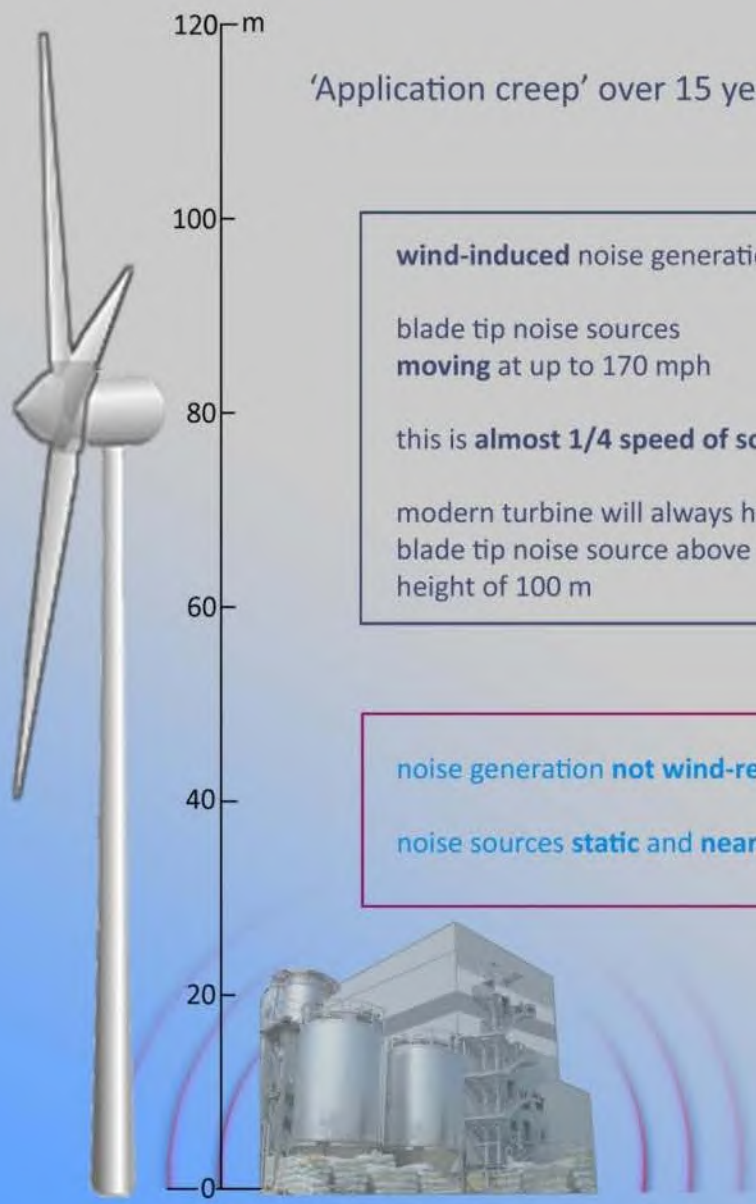
daily variation of wind shear exponent through large range (0.1 - 0.5)

extended periods of very high shear in evenings and night time

10 m height wind speeds up to 5 m/s

'moderate' downwind conditions
- unspecified wind shear

Present applications of ISO 9613-2 show startling disparities with original design constraints



'Application creep' over 15 years:

wind-induced noise generation

blade tip noise sources
moving at up to 170 mph

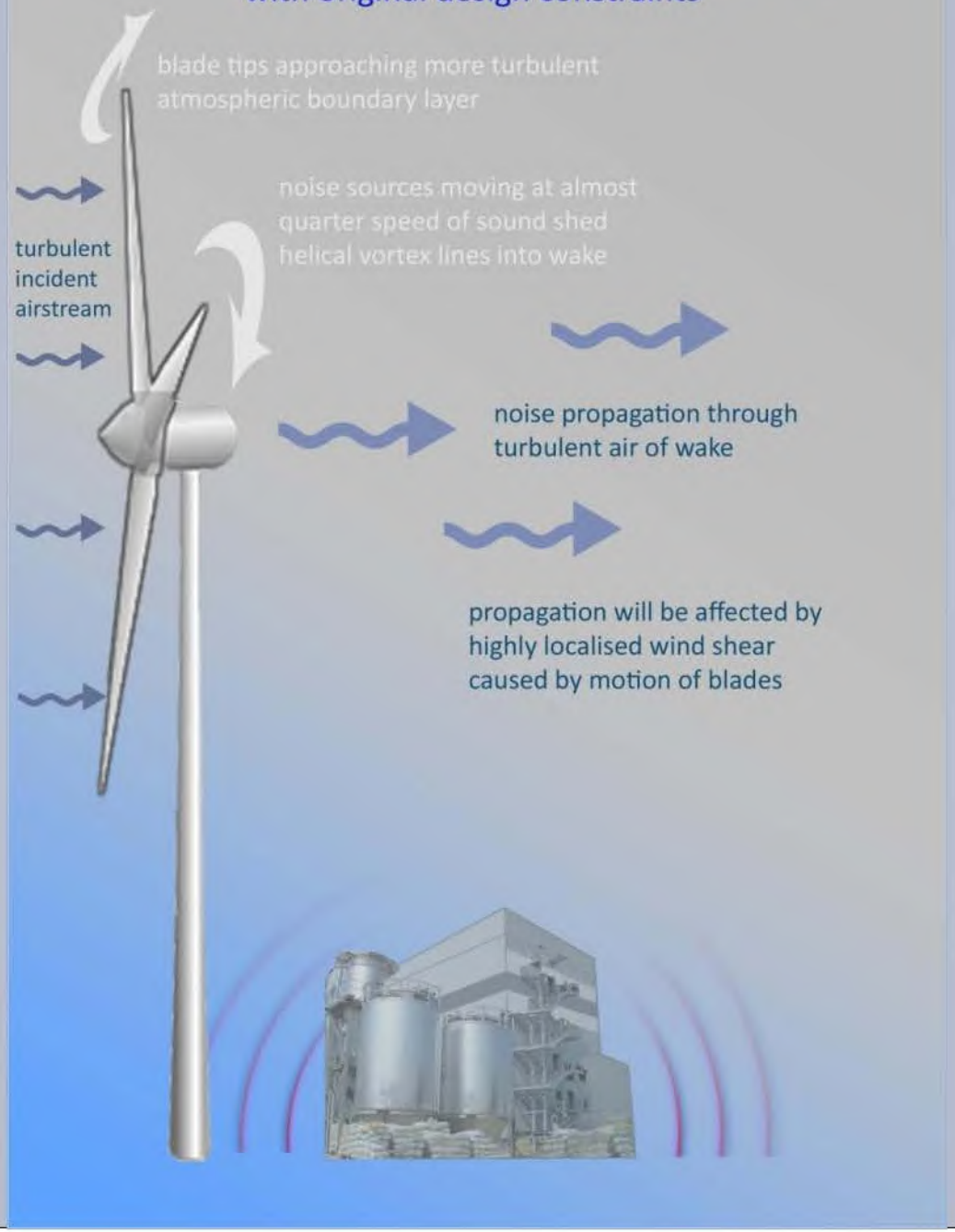
this is **almost 1/4 speed of sound**

modern turbine will always have
blade tip noise source above
height of 100 m

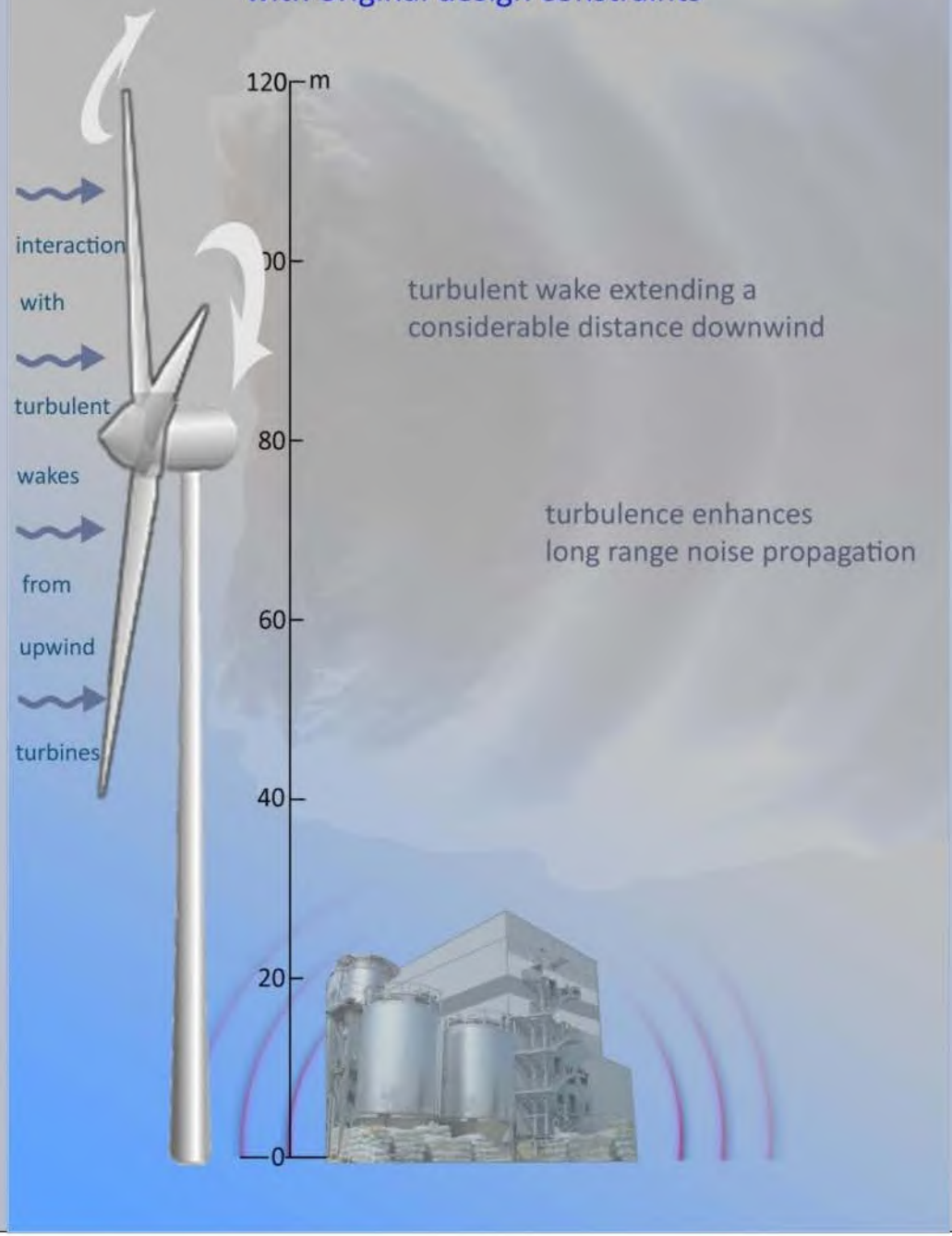
noise generation **not wind-related**

noise sources **static** and **near-ground**

Present applications of ISO 9613-2 show startling disparities with original design constraints



Present applications of ISO 9613-2 show startling disparities with original design constraints

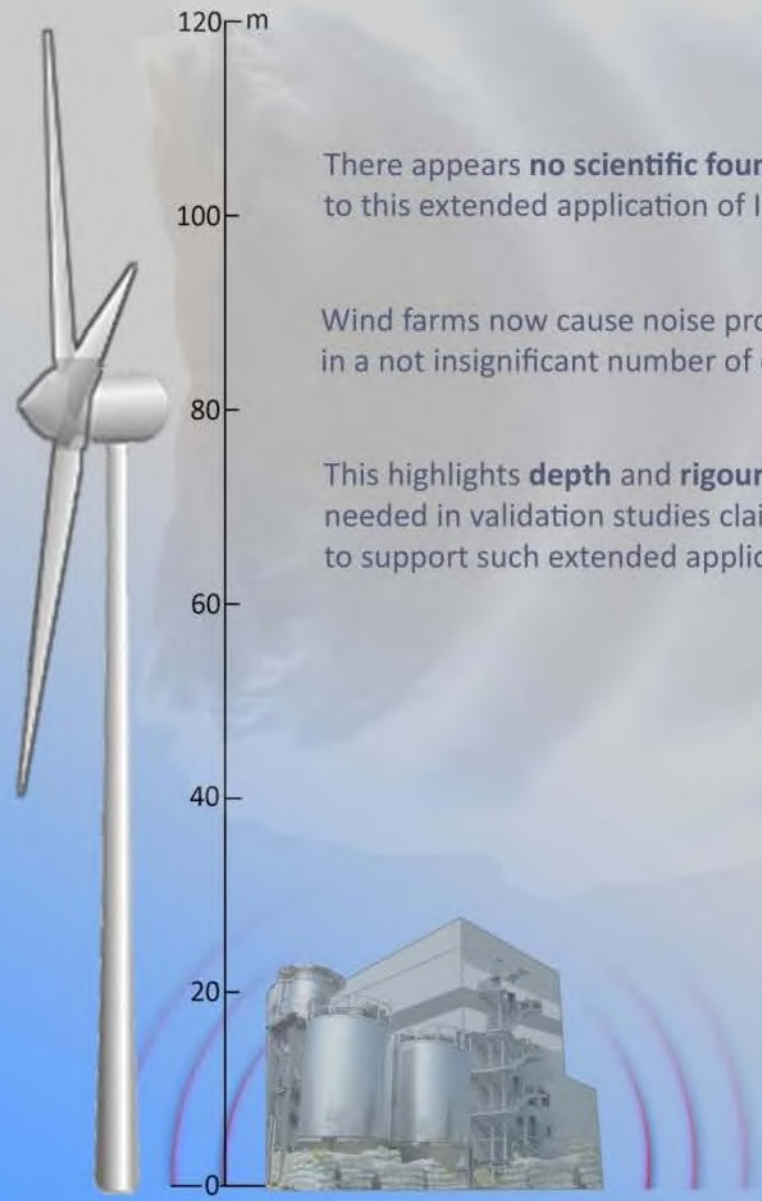


Photograph from Risø, Danish National Laboratory for Sustainable Energy, showing turbine wakes in the Horns Rev off-shore wind farm

The unique nature of a wind turbine noise source is clearly illustrated

Image presumably obtained under atmospheric conditions rendering turbine wakes visible via formation of water droplets in response to pressure changes

Present applications of ISO 9613-2 show startling disparities with original design constraints



There appears **no scientific foundation** to this extended application of ISO 9613

Wind farms now cause noise problems in a not insignificant number of cases

This highlights **depth** and **rigour** needed in validation studies claiming to support such extended application

Section 9

ISO 9613-2 – Validation Studies on Extended Application to Wind Turbine Noise Prediction

- Study 1

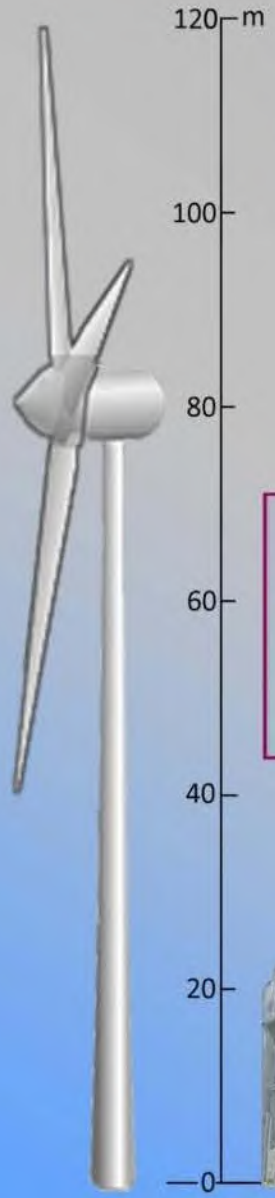
Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

report fails to present any data whatsoever in graphical or tabular form

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

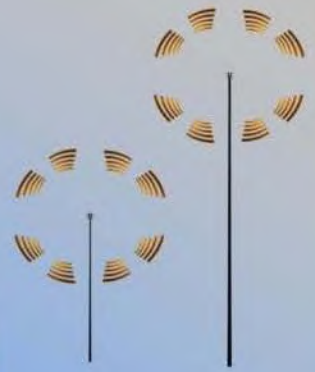


1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

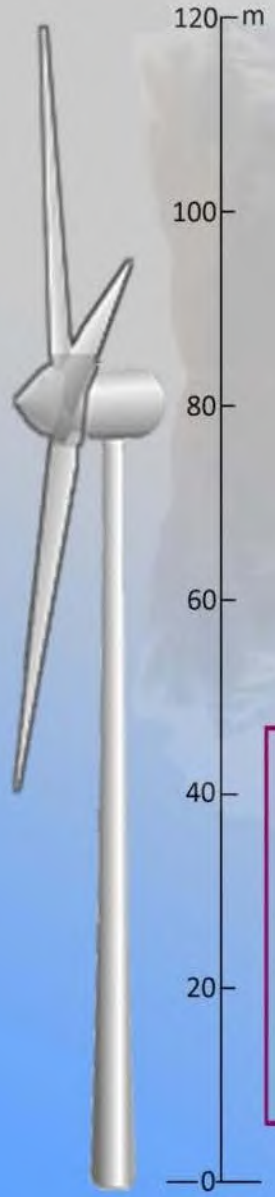
Reference (viii) of IoA Draft Guidelines

used loudspeaker source on a mast at heights between 15 m and 30 m

'to identify the influence of specific parameters on noise propagation'



Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

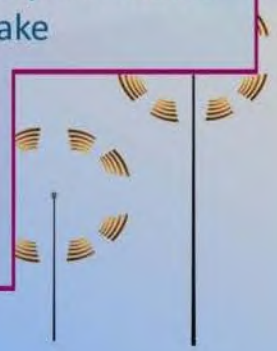


1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

use of low height loudspeaker noise source completely eliminates effects of a turbine wake

study fundamentally flawed for validating ISO 9613 application to wind turbines



Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

elimination of turbine wake effects effectively 'throws out the baby with the bath water'

study fundamentally flawed for validating ISO 9613 application to wind turbines

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

ISO 9613 is an empirical model
derived from noise sources that are:
near-ground
non-wind-related
without a turbulent wake

study fundamentally
flawed for validating
ISO 9613 application
to wind turbines

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

ISO 9613 should **by definition** perform well for such loudspeaker sources:

the situation falls within the model's parameter space

study fundamentally flawed for validating ISO 9613 application to wind turbines

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

Further to ill-conceived scope, report appears inconsistent with established physics

from p1.....'The major objectives of this project are thus: - to establish by measurement the important parameters controlling the propagation of wind farm noise to the far field.....'

However:

the report appears to give no discussion whatsoever of the effects of wind shear

neither does any wind shear data appear to have been measured or provided

it would appear that wind shear was **not** considered as an important parameter influencing downwind noise propagation

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

The report then appears totally mistaken in its conclusion that:

'The primary cause for the observed variation in noise levels is the systematic dependence of the sound pressure level on the component of vector wind speed from the source to the receiver'

(*p9 - unscreened propagation over all terrain types*)

this assertion of a causal relationship between sound pressure level and wind speed is quite wrong - the two are essentially unrelated

It appears not to have been realised that wind shear must have been simultaneously varying with wind speed, and was causing the observed effects

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

See in contrast a recent authoritative publication on the problem of sound propagation in a wind:

G. W. Gibbons & C. M. Warnick "Traffic noise and the hyperbolic plane", Annals of Physics 325 (2010)

One of the authors is Prof Gary W Gibbons FRS, Professor of Theoretical Physics at DAMTP, the Department of Applied Mathematics and Theoretical Physics, University of Cambridge

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

See in contrast a recent authoritative publication on the problem of sound propagation in a wind:

The paper includes a historical perspective on understanding of enhanced noise propagation at long distances downwind:

'This apparent paradox, and its resolution, have been known since at least the time of Stokes [1857].'

'The explanation given by Stokes is that this effect is produced by *wind shear*, the variability in the wind speed as a function of height.'

'This gives rise to refraction, causing sound rays to bend away from the ground in the upwind direction and towards the ground in the downwind direction.'

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

Gibbons & Warnick include the following historical references:

[1] G. G. Stokes, "On the Effect of Wind on the Intensity of Sound," Report of the British Association, Dublin, 1857

[2] O. Reynolds, "On the Refraction of Sound by the Atmosphere," Proc. Roy. Soc. 22 (1874)

[3] J. W. S. Rayleigh, "The Theory of Sound", Macmillan (1986) §289, Vol 2.

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. Bass J H, Bullmore A J, Sloth E,
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

Reference (viii) of IoA Draft Guidelines

The 3 authors cited by Gibbons and Warnick were leading 19th century scientists:

Sir George Stokes was Professor of Mathematics at Cambridge and the future President of the Royal Society

Osborne Reynolds was another future member of the Royal Society

Lord Rayleigh was another future President of the Royal Society and Nobel prize winner; *he put the effect of wind shear on a more quantitative basis in 1894, in his founding work in the development of acoustics,* **'The Theory of Sound'**; this book was reprinted as recently as 1986 **and is specifically recognised today as a 'landmark text' by the Institute of Acoustics**, via the citation to their premier award for outstanding contributions to acoustics, **the Rayleigh Medal**

Section 9

ISO 9613-2 – Validation Studies on Extended Application to Wind Turbine Noise Prediction

- Study 2

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

2. Bullmore A J, Adcock J, Jiggins M, Cand M,
Proc. Wind Turbine Noise 2009 Conference, Aalborg Denmark, June 2009, 'Wind Farm Noise Predictions and Comparison with Measurements'

Reference (v) of IoA Draft Guidelines

This subsequent study was published 11 years after ref (viii) above.

It makes explicit reference to the earlier study and its conclusions, with no critical comment whatsoever

This later study again:

fails to specifically identify wind shear as a key variable in the mechanism of long range noise propagation

contains no measurements of wind shear or discussion of its crucial role in this respect

The study makes only one specific reference to wind shear, but only regarding differences in wind speed between hub height and standard reference height (p3, para3)

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

2. Bullmore A J, Adcock J, Jiggins M, Cand M, Proc. Wind Turbine Noise 2009 Conference, Aalborg Denmark, June 2009, 'Wind Farm Noise Predictions and Comparison with Measurements'

Reference (v) of IoA Draft Guidelines

This subsequent study was published 11 years after ref (viii) above.

It is crucial to record vertical atmospheric wind shear conditions during noise measurements, in order to judge applicability to other situations

- daily variation in wind shear might, or might not, have been substantial

This information is not available - only horizontal variations in hub-height wind speed are stated between individual turbines within a wind farm

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

2. Bullmore A J, Adcock J, Jiggins M, Cand M, Proc. Wind Turbine Noise 2009 Conference, Aalborg Denmark, June 2009, 'Wind Farm Noise Predictions and Comparison with Measurements'

Reference (v) of IoA Draft Guidelines

This subsequent study was published 11 years after ref (viii) above.

The study provides no specific validation evidence to support extended application of ISO 9613 to wind turbines with a turbulent incident airstream

meteorological conditions, or wake effects from other turbines, could create such turbulent airstreams

there is no reason why ISO 9613-2 predictions should be at all accurate in these cases

Section 9

ISO 9613-2 – Validation Studies on Extended Application to Wind Turbine Noise Prediction

- Study 3

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

3. Evans T and Cooper J,
Proc. Acoustics 2011 Conference, Gold Coast Australia November 2011, 'Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms'

Reference (vii) of IoA Draft Guidelines

This most recent study was published 13 years after ref (viii) above.

It identifies the studies of references (v) and (viii) above as 'key investigations', and gives a totally non-critical summary of their conclusions

This most recent study <u>again</u>:

fails to identify the crucial role of wind shear in determining the propagation path and intensity of outdoor sound

fails to report any measurements of atmospheric wind shear pertaining at the time of the downwind noise measurements

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

3. Evans T and Cooper J,
Proc. Acoustics 2011 Conference, Gold Coast Australia November 2011, 'Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms'

Reference (vii) of IoA Draft Guidelines

This most recent study was published 13 years after ref (viii) above.

Again, the study provides no specific validation evidence to support extended application of ISO 9613 to wind turbines with a turbulent incident airstream

meteorological conditions, or wake effects from other turbines, could create such turbulent airstreams

there is no reason why ISO 9613-2 predictions should be at all accurate in these cases

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

3. Evans T and Cooper J,
Proc. Acoustics 2011 Conference, Gold Coast Australia November 2011, 'Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms'

Reference (vii) of IoA Draft Guidelines

The results of this study could mislead if simply taken at face value:

ISO 9613-2 predictions employ the LAeq noise metric

Measured noise levels employ the LA90, 10 min metric

comparisons are presented between them, in which one appears to have been directly subtracted from the other

In order to compare 'like with like' a correction has to be applied to the data:

ETSU-R-97 recommends subtraction of between 1.5 and 2.5 dB from LAeq values to yield a reasonable estimate of LA90,10 min levels for wind farm noise

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

3. Evans T and Cooper J,
Proc. Acoustics 2011 Conference, Gold Coast Australia November 2011, 'Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms'

Reference (vii) of IoA Draft Guidelines

The results of this study could mislead if simply taken at face value:

Applying the ETSU-recommended correction:

In 8 out of the 10 cases considered in this study, ISO 9613-2 **underpredicts** wind turbine LA90 noise levels

any concavity in the ground profile renders this underprediction significantly more severe

(the above assumes the standard ISO input parameter of G = 0.5 for propagation over mixed ground)

Section 9

ISO 9613-2 – Validation Studies on Extended Application to Wind Turbine Noise Prediction

- Conclusions

Three validation studies on extended application of ISO 9613-2 to wind turbine noise prediction

1. **Bass J H, Bullmore A J, Sloth E,**
EU Joule Project Final Report (1998):
'Development of a Wind farm
Noise Propagation Prediction Model'

2. **Bullmore A J, Adcock J, Jiggins M, Cand M,**
Proc. Wind Turbine Noise 2009 Conference,
Aalborg Denmark, June 2009, 'Wind Farm Noise
Predictions and Comparison with Measurements'

3. **Evans T and Cooper J,**
Proc. Acoustics 2011 Conference, Gold Coast Australia
November 2011, 'Comparison of predicted and
measured wind farm noise levels and implications
for assessments of new wind farms'

References (v), (vii) and (viii) of IoA Draft Guidelines

All 3 of these studies appear scientifically unsound and none of them have been published in a peer-reviewed journal

They do not appear appropriate as **fundamental references** for DECC and IoA-endorsed National UK Guidelines on the application of ETSU R 97

Problems related to the use of the existing noise measurement standards when predicting noise from wind turbines and wind farms.

Erik Sloth Vestas

Niels Christian Møller Nielsen VESTAS
Ejler Kristensen BONUS Energy
Bo Søndergaard DELTA

Overview

- Noise Measurements (IEC 61400-11:2002)
  - Short description of the measurement method
  - Use of measurement results, including influence on inaccuracy.

- Noise prediction
  - Terrain and meteorology influence on the actual emitted sound
  - Methods used in noise calculations

- Noise assessment
  - Descriptors
  - Noise limits
  - Further investigations needed

Noise Measurements (IEC 61400-11:2002)

We correct for:

Air pressure
Air temperature

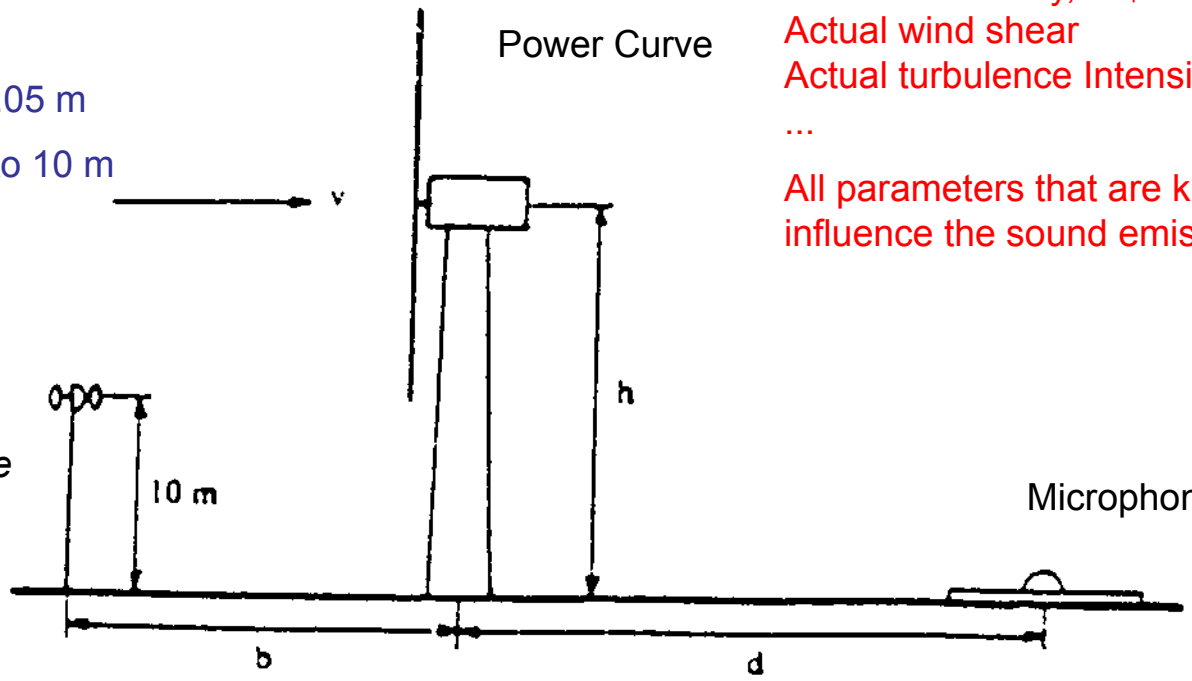
Standard terrain roughness z = 0.05 m

All recalculated to 10 m wind speed

We do not correct for

Actual inflow angels
Actual air density, except in the power curve
Actual wind shear
Actual turbulence Intensity
...

All parameters that are known to influence the sound emission



Anemometer
For background noise only

Noise Measurement

- The results are standardized noise levels, which are fairly comparable from measurement to measurement on a given turbine type.
- The wind turbine is used as a wind speed meter through a power curve measured on an ideal site (IEC 61400-12) OBS impossible if actual terrain does not fulfill conditions
- Other parameters influence the noise level: relative humidity, turbulence, inflow angle, wind shear, turbine pitching are not accounted for.

- The result is a fairly good tool for verification of warranties, but not a good tool for predicting noise at imission points where people actually can get annoyed.

- The Sound Power Level related to the produced power or at least the sound power level as a function of hub height wind speed could be a more basic relationship

Typical problems in using the measurement results

- Where do we see the major deviations from standardized conditions during actual use of measurement results

- The wind turbines are almost always raised at sites where roughness differ from the standardized completely flat measurement site.

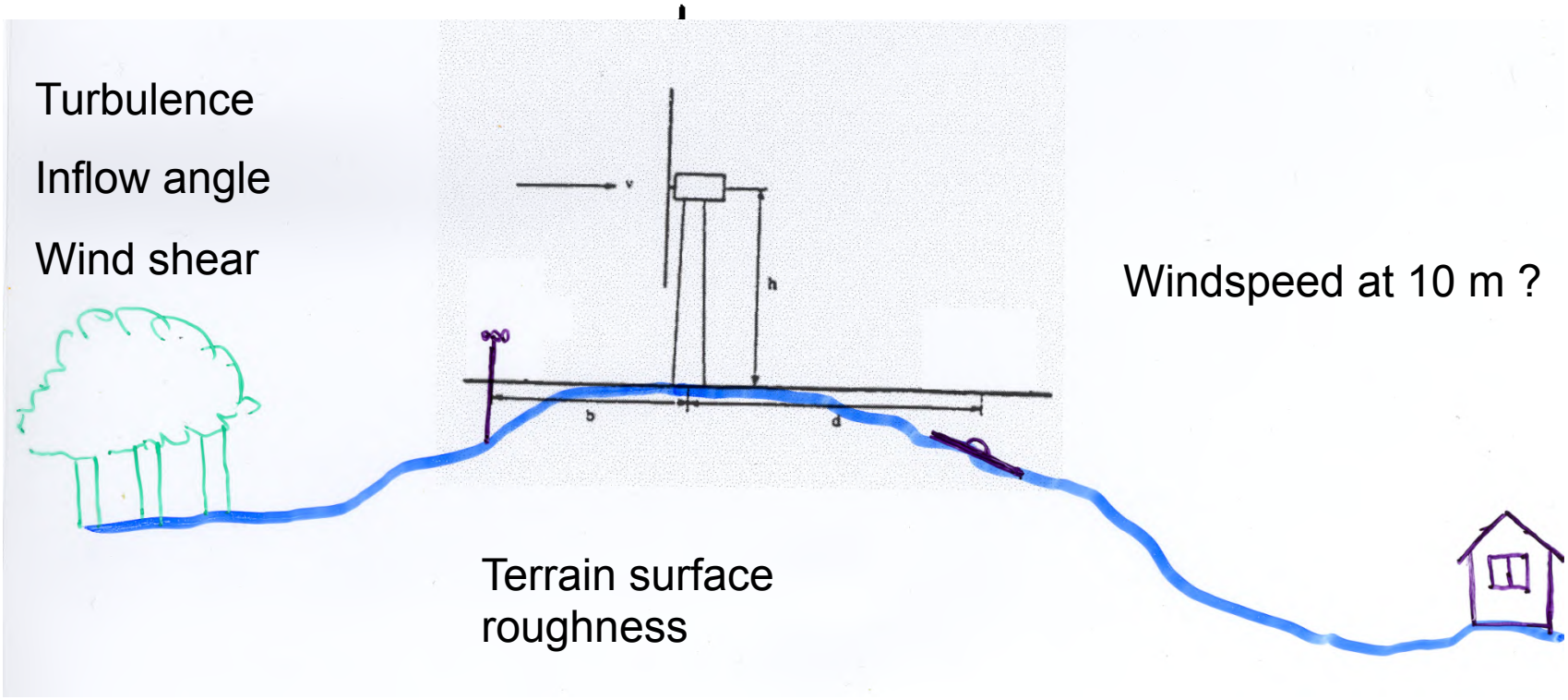
- Further we see different air density
- different wind shear
- different turbulence in inflow air
- different inflow angles

- Finally we often see other hub heights than used during documentation

Use of measurement results

For noise control measurements

For noise level calculations



Conclusion on measurement results

- The differences in site conditions creates differences in emitted sound power level.
- The differences could be both increased and decreased emitted sound power levels in real life applications
- The differences will transfer directly to the imitted sound power levels, and may thereby create increased annoyances in real life

- Therefore – site specific sound power levels should be used unless a good safety margin is present using standardized emission levels.

Uncertainty

- According to IEC 61400-11:2002 the standard deviation of a measurement results is app. 0.9 – 1.5 for an ideal site
- If the measurements are made at a site with considerable turbulence intensity or wind shear the standard deviation can be app. 2.0 dB
- The result is that when used for calculating the noise from a wind farm at an imission point, some WTG will be higher than the expected level and some will be lower.
- To correct for this, the measured inaccuracy cannot be placed upon the total calculated level, but must be included in the calculations.
- The result is that the higher the number of WTG's in the project is, the smaller the resulting inaccuracy.
- If the results are used for calculating the noise from a wind farm the standard deviation should be calculated as the weighted standard deviation

$$\sigma_{res} = \sigma_{method} + \sigma_{source} = \sigma_{method} + \frac{\sqrt{\sum (\sigma_i \cdot 10^{L_i/10})^2}}{\sum 10^{L_i/10}}$$

Solution to the outlined problems

- Accept that different sound power levels should be used in predictions and warranties.
- Avoid using sound power levels that include inaccuracy in predictions unless there is a good safety margin.
- The inaccuracy should be included in the calculation – the higher the number of WTG's the less the probability that all are in the high end of the uncertainty interval
- Use sound power levels that at least are corrected for: hub height, wind shear, air density, turbulence, inflow angle
- Be careful to make sure that the background noise measurements and wind conditions at the turbine positions uses the same reference position.

Noise level calculation models

- There are lots of different noise level calculation models:
  - ISO 9613-2 which is the model that we see the most
  - VDI 2714
  - Concawe
  - BS 5228
  - General Prediction Method (Danish)
  - Danish EPA Guidelines
  - Netherlands Guidelines 1999
  - Swedish method (land/sea)
  - .....

- Most of the methods are developed for noise from Industry, wind speeds below 5 m/s and standard meteorological conditions and must be suspected to give poor results at larger distances.
- ISO 9613-2 is known sometimes to overestimate the terrain effects if soft ground is used
- Manufacturers, developers, consultants and authorities have an interest in a noise level calculation model developed specifically for wind turbine noise

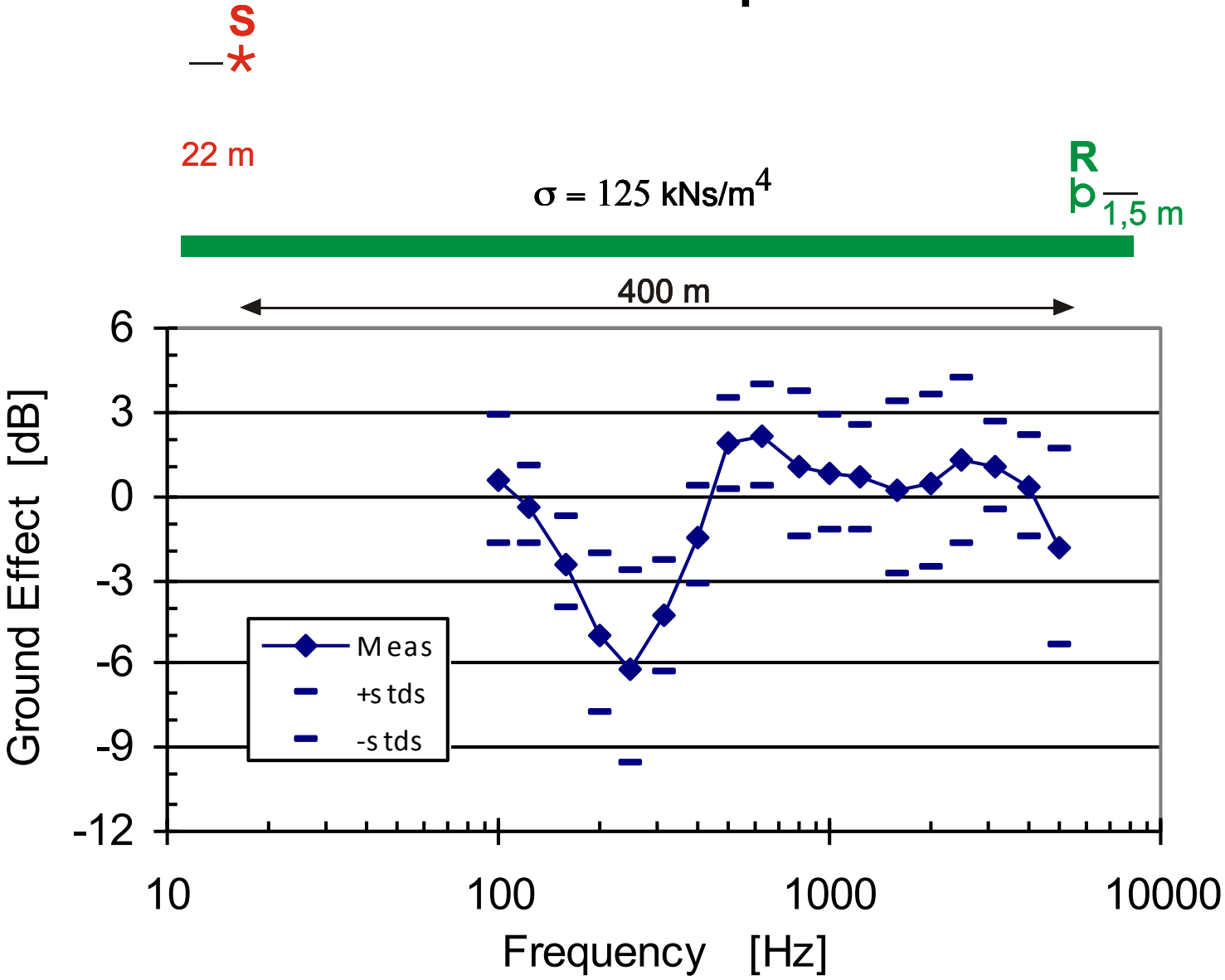
Noise calculation models

- In an EU project JOR3-CT95-0065 a model for wind turbine noise propagation (WiTuProp) was developed giving good results

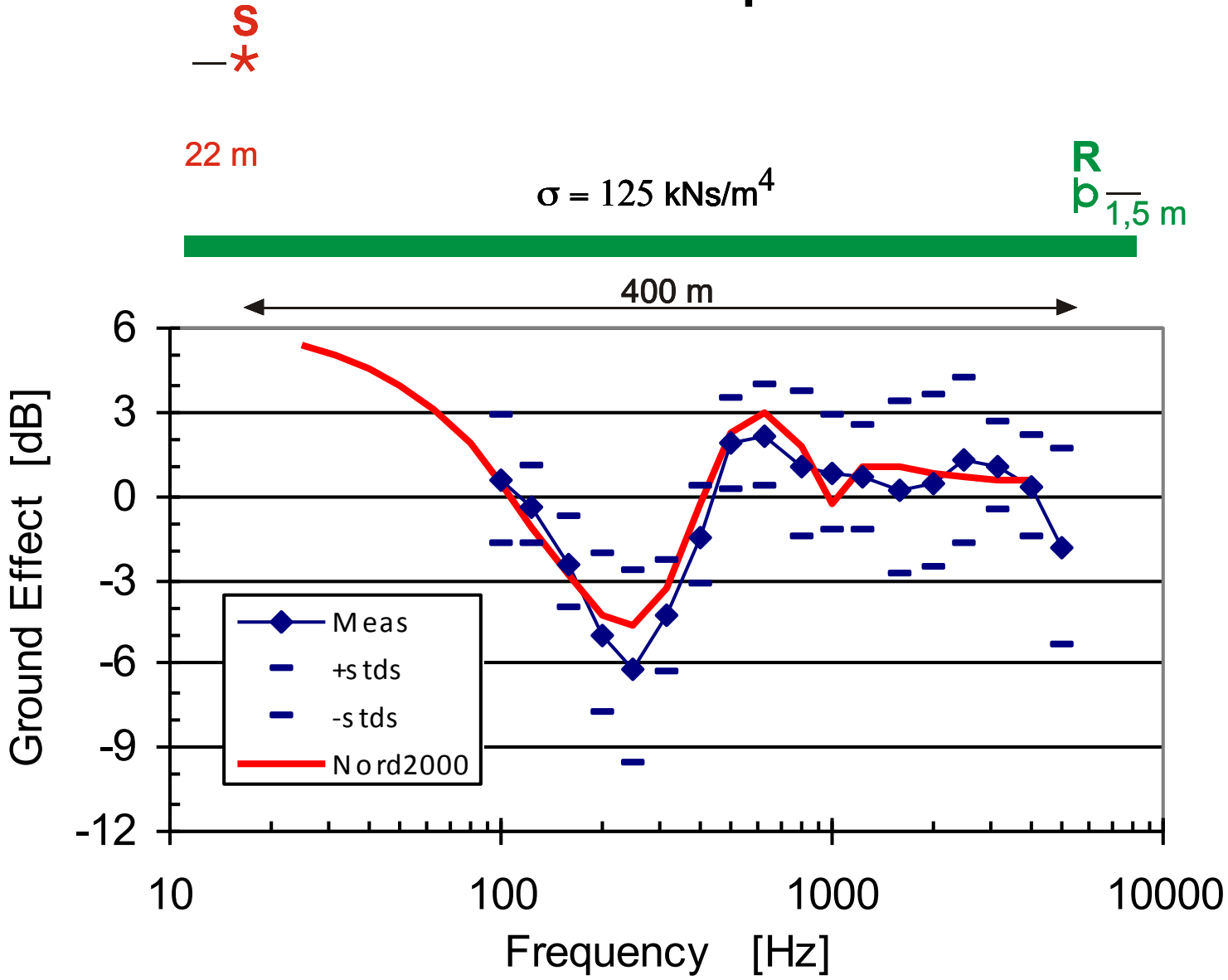
- The WiTuProp model takes into account
  - meteorological conditions:
    - Wind speed / terrrain surface roughness and direction
    - Air temperature and air temperature gradient
    - Relative air humidity
  - The ground type
    - Flow resistivity for grassland and harder surfaces
  - Screening (by terain or screens / barriers)

- WiTuProp is a special case of a more comprehensive model developed later: *NORD2000*

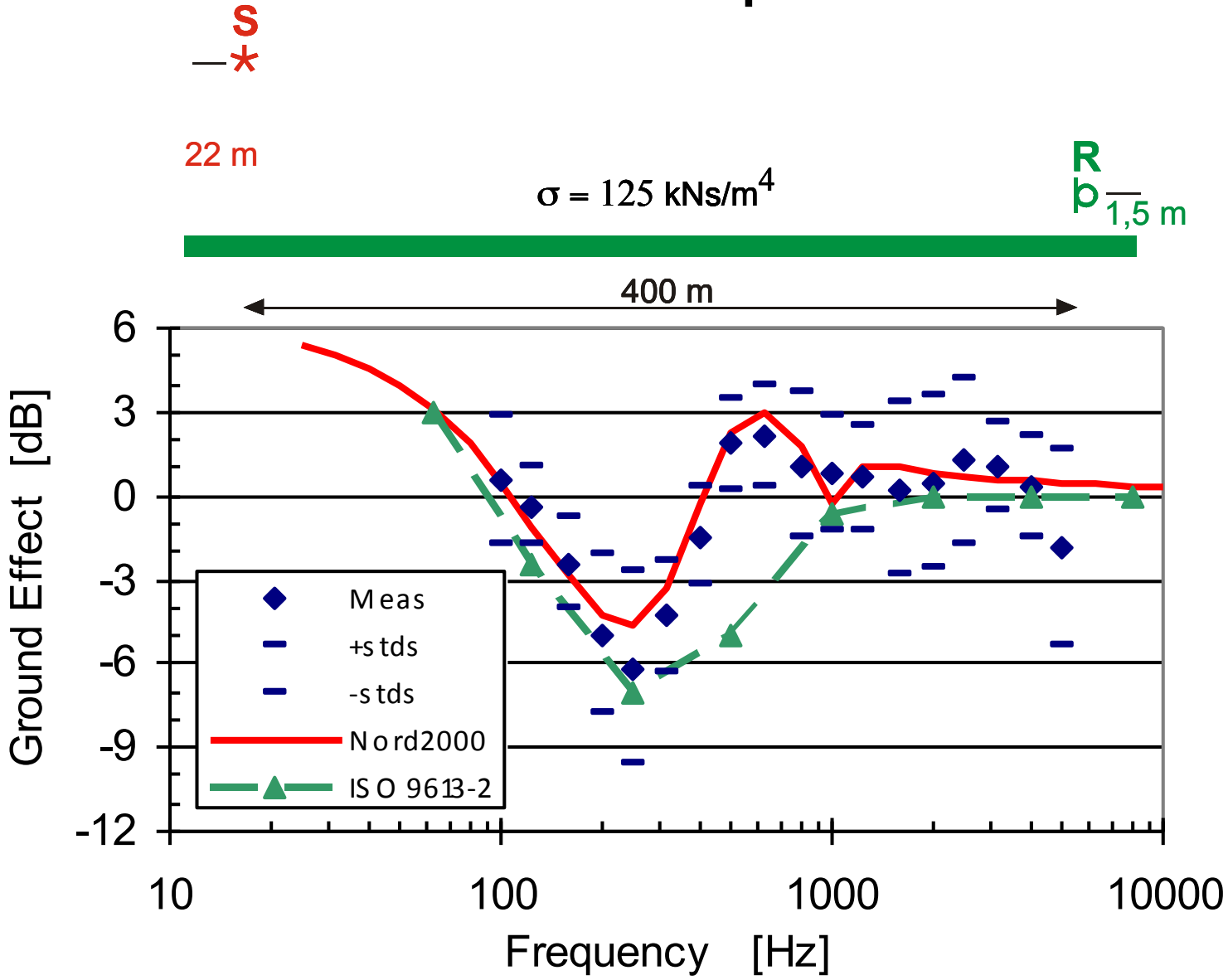
Nord2000 / WiTuProp vs. ISO 9613-2



Nord2000 / WiTuProp vs. ISO 9613-2



Nord2000 / WiTuProp vs. ISO 9613-2



Nord2000 model

- Meteorological conditions are better covered
- Complex terrain profiles (hill/valley)
- Mixed ground
- Terrain roughness
- Improved screen modelling
- 1/3 octave-band results
- Physical model – NOT empirical

Recommendation if the advanced model is not used:

- Use ISO 9613-2
- Make sure that hard terrain is used
- Be careful when defining screening effects from terrain - specially edge effects can be difficult to model

Noise Assessment

- The noise level at the imission points are normally given as an A-weighted noise level at different wind speeds.
- A tonality evaluation is normally included for the receiving points.

What do we know of the annoyance of the noise:

- We know that noise from wind turbines sometimes annoys people even if the noise is below the noise limits.
- Often people complaints on low frequency noise which many investigations often show in not present
- The noise limits are usually adapted from industrial noise limits and are based upon the principle that a given percentage of the population will feel annoyed when the limit is exactly fulfilled.
- Evaluation of tonality in the turbine noise is more based on the reproducibility of the results than on pure knowledge on what is actually annoying

Noise assessment

- Other descriptors need to be investigated to understand the annoyance caused by wind turbines
  - Low frequency noise and Infrasound – we cannot see it in our measurements
  - Modulation – may be the parameter that is heard as low frequency noise
  - Masking – which noise can mask noise from wind turbines
  - Other characteristics
  - ..
- This mean that tape recordings should me made on all sites in order to enable later analysis of up till now unrecognized parameters.
- In order to enable listener tests, artificial head investigations should be made
- We as a producer cannot cover this alone, since the local rules always need to be followed

Our recommended research program

- Artificial head measurements on real turbines of different sizes
- Background noise measurements on real sites
- Listener tests on obtained results
- These measurements are being made on a test basis during our Danish measurements

- General Research that is needed in this area includes
  - Psychoacoustic experiments
  - Listener test
  - Measurements at low frequencies
  - Analysis for other characteristics
  - ..

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BONUS® Energy A/S

Questions ?

DELTA

ESTERSON Sarah * ODOE

From: Gregory Rimbach <Gregory.P.Rimbach@state.or.us>
Sent: Monday, April 29, 2019 3:53 PM
To: ESTERSON Sarah * ODOE
Cc: RIMBACH Gregory P; REIF Sarah J
Subject: RE: Stateline Wind Project: Notice of Complete Request for Amendment 5 of the Site Certificate, Draft Proposed Order - April 29, 2019 Comment Deadline
Attachments: 190429 SWPAMD5 DPO ODFW Comment Letter.pdf

Sarah:

Please find ODFW comment letter on the Stateline Wind Power RFA5. If you need anything else, please let me know.

Greg Rimbach
Umatilla District Wildlife Biologist
Oregon Department of Fish & Wildlife
73471 Mytinger Lane
Pendleton, OR 97801
gregory.p.rimbach@state.or.us
541.276.2344

From: ESTERSON Sarah * ODOE [mailto:Sarah.Esterson@oregon.gov]
Sent: Monday, April 01, 2019 4:17 PM
Subject: Stateline Wind Project: Notice of Complete Request for Amendment 5 of the Site Certificate, Draft Proposed Order - April 29, 2019 Comment Deadline

Good afternoon,

On January 17, 2019 the Oregon Energy Facility Siting Council (Council) and the Oregon Department of Energy (Department) received a complete Request for Amendment 5 of the Stateline Wind Project site certificate (RFA5). The Stateline Wind Project is an operational wind facility located in Umatilla County – see locational map in attached notice. On March 29, 2019, the Department issued its Draft Proposed Order presenting recommended findings of fact related to Council standards at OAR Chapter 345 Divisions 22-24.

Summary of the amendment request
RFA5 seeks Council approval to amend the site certificate to change the name of the "Stateline 3" facility unit to "Vansycle II;" repower 43 existing wind turbines at Stateline 3, including removal and replacement of nacelles and rotors (turbine blades and hub) which would increase maximum blade tip height from 416 to 440 feet, rotor diameter from 305 to 354 feet, and decrease minimum aboveground blade tip clearance from 110 to 85 feet. RFA5 also seeks approval to construct temporary laydown areas and access roads, and add and amend site certificate conditions.

Attachments
Public Notice on Request for Comments on the Complete RFA5 and Draft Proposed Order is attached for your reference.

RFA5, draft proposed order and public notice are available on the Department's project website at:

https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx

Comment Deadline
Written comments on RFA5 and the draft proposed order must be received by the Department **by 5:00 p.m. on April 29, 2019 and must be submitted in writing by mail, email, hand-delivery or fax per below:**

Sarah Esterson, Senior Siting Analyst
Oregon Department of Energy
550 Capitol Street NE, 1st Floor
Salem, OR 97301
Email: sarah.esterson@oregon.gov
Fax: 503-373-7806

Thank you, and please do not hesitate to contact me with any questions.

Sarah

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol St NE, 1st Floor
Salem, OR 97301
P:(503) 373-7945
C: (503) 385-6128

Oregon.gov/energy

Oregon
Kate Brown, Governor

Department of Fish and Wildlife
John Day Watershed
East Region
73471 Mytinger Lane
Pendleton, Oregon 97801
(541) 276-2344
FAX (541)276-4414

April 29, 2019

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol Street NE., 1st Floor
Salem, OR 97301

RE: Stateline Wind Project Request for Amendment 5 (RFA5) and Draft Proposed Order

Dear Sarah:

This letter is in regards to the Stateline Wind Project Request for Amendment 5 and Draft Proposed Order. The Oregon Department of Fish and Wildlife has reviewed all pertinent information and find that the proposed activities outlined in Exhibit P (Fish and Wildlife Habitats and Species, Stateline Wind Project-Vansycle II, January 2019), section 1.0-9.0, are acceptable. If you have any questions, please feel free to contact me

Sincerely,

Greg Rimbach
Oregon Dept of Fish and Wildlife
Umatilla Dist. Wildlife Biologist
Pendleton, OR

c: Sarah Reif, ODFW

ESTERSON Sarah * ODOE

Subject: FW: Stateline Wind Project Request for Amendment 5 - Council Decision on May 17, 2019
Attachments: Planning Comments for DPO Amendment 5.pdf

From: Robert Waldher [mailto:robert.waldher@umatillacounty.net]
Sent: Friday, April 26, 2019 12:24 PM
To: ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov>
Cc: carol.johnson@umatillacounty.net
Subject: Re: Stateline Wind Project Request for Amendment 5 - Council Decision on May 17, 2019

Hi Sarah - Please see my comments attached. Let us know if you have additional questions. Thank you!

Bob

Bob Waldher, RLA

Director

Umatilla County Department of Land Use Planning

216 SE 4th ST | Pendleton, OR 97801

Phone: 541-278-6251 | Fax: 541-278-5480

http://www.umatillacounty.net/planning - Visit our website for copies of planning documents, permit applications and other helpful information.

Umatilla County
Department of Land Use Planning

DIRECTOR
ROBERT WALDHER

LAND USE
PLANNING,
ZONING AND
PERMITTING

CODE
ENFORCEMENT

SOLID WASTE
COMMITTEE

SMOKE
MANAGEMENT

GIS AND
MAPPING

RURAL
ADDRESSING

LIAISON, NATURAL
RESOURCES &
ENVIRONMENT

April 26, 2019

Oregon Department of Energy
Attn: Ms. Sarah Esterson
550 Capital Steet NE
Salem, OR 97301

Subject: Stateline III Wind Energy Facility
Response to Proposed Conditions - Draft Proposed Order for Amendment 5

Dear Ms. Esterson:

The Umatilla County Planning Department has completed a review of Stateline III Wind Energy Facility – Draft Proposed Order for Amendment 5, specifically the Recommended Conditions of Approval related to the local applicable substantive criteria for land use. A summary of comments from the review is included below:

Our department affirms that the Certificate Holder has been working with Umatilla County to meet the setback requirements in Umatilla County Development Code (UCDC) Section 152.616 (HHH)(6)(a)(4) for two wind turbines (turbines 1 and 21) proposed for repowering. However, evidence satisfying the requirement has not been provided. Our department recommends that the following (see underlined text) be incorporated into Recommended Condition 142:

Recommended Condition 142: Prior to construction associated with repowering of Vansycle II wind turbines number 1 and 21, the certificate holder shall:

(a) Provide documentation demonstrating that the county road right of way adjacent to: 1) Gerking Flat Road and, 2) Butler Grade Road have been relocated or adjusted such that wind turbines 1 and 21 satisfy the setback requirements to county road rights of way pursuant to UCDC Section 152.616(HHH)(6)(a)(4). Wind turbines not meeting the setback requirements from county road right of way are precluded from being repowered at the proposed blade tip height.

(b) The documentation shall include written verification from Umatilla County that confirms the county road rights of way have been adjusted. [AMD5]

Thank you for your attention to our comments and requirements. Please contact me with additional questions at (541) 278-6251 or e-mail at robert.waldher@umatillacounty.net.

Sincerely,

Robert T Waldher

Robert T. Waldher
Planning Director

ESTERSON Sarah * ODOE

From: Christian Nauer <christian.nauer@ctwsbnr.org>
Sent: Monday, April 8, 2019 1:35 PM
To: ESTERSON Sarah * ODOE
Cc: Robert Brunoe
Subject: Re: Stateline Wind Project: Notice of Complete Request for Amendment 5 of the Site Certificate, Draft Proposed Order - April 29, 2019 Comment Deadline
Attachments: PastedGraphic-1.pdf

Dear Sarah,

Thank you for the opportunity to provide comment on the Stateline Wind Project Notice of Complete Request for Amendment 5 of the Site Certificate (Draft Proposed Order).

General Comment:

As the technical reviewer for NHPA Section 106 and other cultural resource issues for the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO), the CTWSRO Tribal Historic Preservation Office (THPO) has concerns with the potential effects to historic properties or cultural resources within the Project Area of Potential Effects (APE). The Project APE is within the areas of concern for the CTWSRO.

Project-specific Comment(s):

This office would like to defer comment on cultural resource issues related to this Amendment 5 request to our neighbors to the east. Please contact the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) for comment. In the absence of a comment from Umatilla, this office would like to suggest that if any of the proposed amendments to the site certificate conditions includes potential effects to areas that have not been previously surveyed for cultural resources, then additional identification efforts may be warranted.

Thanks again for your consideration, and for your efforts to protect cultural resources,

Christian

Christian Nauer, MS

Archaeologist
Confederated Tribes of the Warm Springs Reservation of Oregon
Branch of Natural Resources

christian.nauer@ctwsbnr.org
Office 541.553.2026
Cell 541.460.8448

*The Confederated Tribes of the Warm Springs Reservation of Oregon have reserved treaty rights in Ceded Lands, as well as Usual and Accustomed and Aboriginal Areas, as set forth through the Treaty with the Middle Tribes of Oregon, June 25, 1855.

*Please know that review by the Tribal Historic Preservation Office does not constitute Government-to-Government consultation. Please ensure that appropriate Government-to-Government consultation is made with the Confederated Tribes of the Warm Springs Tribal Council.

On Apr 1, 2019, at 4:08 PM, ESTERSON Sarah * ODOE <Sarah.Esterson@oregon.gov> wrote:

Good afternoon,

On January 17, 2019 the Oregon Energy Facility Siting Council (Council) and the Oregon Department of Energy (Department) received a complete Request for Amendment 5 of the Stateline Wind Project site certificate (RFA5). The Stateline Wind Project is an operational wind facility located in Umatilla County – see locational map in attached notice. On March 29, 2019, the Department issued its Draft Proposed Order presenting recommended findings of fact related to Council standards at OAR Chapter 345 Divisions 22-24.

Summary of the amendment request
RFA5 seeks Council approval to amend the site certificate to change the name of the "Stateline 3" facility unit to "Vansycle II;" repower 43 existing wind turbines at Stateline 3, including removal and replacement of nacelles and rotors (turbine blades and hub) which would increase maximum blade tip height from 416 to 440 feet, rotor diameter from 305 to 354 feet, and decrease minimum aboveground blade tip clearance from 110 to 85 feet. RFA5 also seeks approval to construct temporary laydown areas and access roads, and add and amend site certificate conditions.

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Public Notice on Request for Comments on the Complete RFA5 and Draft Proposed Order is attached for your reference.

RFA5, draft proposed order and public notice are available on the Department's project website at: https://www.oregon.gov/energy/facilities-safety/facilities/Pages/SWP.aspx

Comment Deadline
Written comments on RFA5 and the draft proposed order must be received by the Department **by 5:00 p.m. on April 29, 2019 and must be submitted in writing by mail, email, hand-delivery or fax per below:**

Sarah Esterson, Senior Siting Analyst
Oregon Department of Energy
550 Capitol Street NE, 1st Floor
Salem, OR 97301
Email: sarah.esterson@oregon.gov
Fax: 503-373-7806

Thank you, and please do not hesitate to contact me with any questions.

Sarah

Sarah T. Esterson
Energy Facility Siting Analyst
Oregon Department of Energy
550 Capitol St NE, 1st Floor

Salem, OR 97301
P:(503) 373-7945
C: (503) 385-6128

Oregon.gov/energy
<image001.jpg>

<SWPAMD5 DPO Public Notice 2019-03-29.pdf>

Attachment D: Emergency Action Plan

TABLE OF CONTENTS

1.0 DOCUMENT STORAGE AND INFORMATION

1.1. This **Vansycle I-II & Stateline Emergency Action Plan WVS WSL** is stored in the OpModel under PGD-WSL-PR-EMER-1209251257.

2.0 REVISION HISTORY

Rev #	Revision Description	Approved By Position / Title	Effective Date
2	Modified plan to include items from the PGD Emergency Respnse Plan that were not included	Marc Barron PGD Sr Production Assurance Specialist NEER	01/05/16
3	Modified plan to incorporate changes from the 2017-05 Quality Review	Michael Havens Senior Wind Tech	06/12/2017
4	Modified plan to incoroporate changes from the 2018 Quality Review Check Sheet and revised Appendix 2.	Michael Havens Senior Wind Tech	5-11-2018

3.0 PURPOSE AND SCOPE

3.1. The purpose of this Emergency Action Plan is to establish the planned response actions that will be taken by personnel at the **Vansycle I-II & Stateline** in the event of an emergency situation. These actions are intended to minimize health risks to plant personnel and people in the surrounding community, as well as minimize adverse impacts to the environment.

3.2. This plan serves as guidance intended to be a "living" document such that revisions over time, based on experiences, will continue to increase the speed of identification of threats and decrease response time.

3.3. This procedure applies to all employees, contractors, vendors and visitors performing work at NextEra Energy Resources facilities in the United States.

Note: Each plant/site will maintain a sign in / sign out list for visitors and contractors. This is critical so that in the event of an emergency, the plant will be able to accurately determine if all personnel are accounted for. All employees, contractors and visitors should have a picture ID so in the event of an accident or illness, the identity of the injured can quickly be determined (Site management may elect to require names on hard hats in place of the picture ID).

4.0 REFERENCES AND COMMITMENTS

1. OSHA 29 CFR 1910.38 (Emergency Action Plans)
2. OSHA 29 CFR 1910.39 Fire prevention plans (Subpart E - Means of Egress)
3. SMS 222 – Fire Protection Plan Procedure
4. PGD Hurricane Management (“White Paper”)
5. SMS 209 – Health and Safety Inspections Procedure

6. NEE-SAF-1610 Electric Shock – Required Medical Evaluation

7. SMS 247 - Severe Weather Guidelines

8. Corporate Security - Drones

5.0 DEFINITIONS / ACRONYMS

5.1. AED – Automated External Defibrillator

5.2. CPR – Cardiopulmonary Resuscitation

5.3. EAP – Emergency Action Plan

5.4. FPDC – Fleet Performance and Diagnostic Center

5.5. O&M – Operations and Maintenance

5.6. OSHA – Occupational Safety and Healty Adminsitration

5.7. PGD – Power Generation Division

5.8. PPE – Personal Protective Equipment

5.9. ROCC -Renewable Operations Control Center

6.0 PREREQUISITES AND INITIAL CONDITIONS

6.1. Power Generation Division requires the use of Personal Protective Equipment (PPE). SMS 214 provide a standardized method to define requirements for PPE. The requirements for PPE are dictated based upon the expected hazards of the work. During emergencies, prudent judgment is required as conditions that may pose a risk to safety may be amplified by the nature of the event. Teammates are expected to STOP and evaluate risks associated with the situation to ensure mitigation of safety hazard to self and others in the vicinity. PPE Hazard Assessment Forms should be used as part of emergency drills to help assess the need for additional special protection during emergency situations.

7.0 RECORDS

7.1. Paper copies of this Emergency Action Plan shall be maintained locally on site easily accessible to all at normally occupied locations, examples being:

1. The Facility Maintenance Building

7.2. An electronic copy of this plan will also be accessible on the facility's LAN and in the PGD OpModel.

7.3. This plan will be reviewed upon implementation, whenever revisions are made, and at least annually by the NextEra Emergency Coordinator.

a. Information included in this plan that is required by a regulatory entity must be reviewed by the site commercial Business Manager.

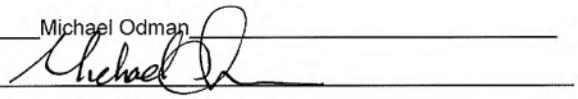
8.0 PROCEDURE

8.1 STATEMENT OF COMPLIANCE

1. It is noted that this Emergency Action Plan was prepared in **May/2018** by NextEra **Vansycle I-II & Stateline**.

2. Thus, I hereby state that the NextEra **Vansycle I-II & Stateline** has evaluated the requirements of all applicable State and Federal Laws and recognize that this Plan has been prepared in accordance with the requirements therein.

Name: Michael Odman

Signature: 

Title: Site/Plant Leader

Date: May 15, 2018

8.2 DESIGNATION OF FACILITY EMERGENCY COORDINATORS

1. It will be site/plant policy that the Facility Representative (as formally designated to the **Vansycle I-II & Stateline** State Emergency Response Commission in the facility's 40 CFR 355.30(b) notification letter) will be known as the "Facility Emergency Coordinator" for the purposes of defining roles in this Emergency Action Plan.

2. Alternate personnel may serve as the Facility Emergency Coordinator when necessary.

Primary Facility Emergency Coordinator:

Michael Odman Site/Plant Leader

Alternate Facility Emergency Coordinator:

Clay Horne Site/Plant Leader

3. Personnel who may be contacted for further information or explanation of duties under this plan are as follows:

Charles Thomsen Site/ Plant Leader

Brian O'Byrne General Manager

8.3 TRAINING

1. All NextEra Energy Resourses employees at the facility shall receive training on this Emergency Action Plan whenever it is modified or on at least an annual basis.

2. Employees will also be trained when this plan is initially implemented.

3. If the facility has an alarm system, each plant employee, visitor and contractor must understand the types of local plant alarms and what they are expected to do in the event of each alarm. The plant safety team must assure that the alarms are audible at all plant buildings and locations.

4. Contractors and visitors who will enter operating areas of the facility will be trained on plant alarms, mustering locations and evacuation procedures before they enter the facility for the first time, and at least annually thereafter.

    a. A listing of contractors with current training on this plan will be maintained at the facility for reference purposes.

8.4 FACILITY LOCATION INFORMATION FOR OUTSIDE EMERGENCY RESPONDERS

1. The **Vansycle I-II & Stateline** is located at **365 Touchet-Gardena Rd, Touchet, WA 99360**.

2. Outside responders can gain access to the facility from **Touchet Gardena Road.**.

3. The entrance road is a paved driveway.

8.5 PLANT / SITE GENERAL EMERGENCY PROCEDURE

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

    a. Natural Disaster /Severe Weather Event (APPENDIX 1)

    b. Fire Response Event (APPENDIX 2)

    c. Physical Security Event (APPENDIX 3)

    d. Cyber Secuirty Event (APPENDIX 4)

    e. Capacity/Transmission Event (APPENDIX 5)

    f. Environmental Event (APPENDIX 6)

    g. Gas Pipeline Event (APPENDIX 7)

    h. Oil Pipeline Event (APPENDIX 8)

    i. Pandemic Event (APPENDIX 9)

    j. Immediate Site Evacuation Procedure (APPENDIX 10)

    k. Delayed Site Evacuation Procedure (APPENDIX 11)

    l. Designated Egress Routes & Muster Areas For Evacuations (APPENDIX 12)

    m. Personnel Injuries and Serious Health Conditions (APPENDIX 13)

2. It will be the responsibility of the Site/Plant Leader to assess a developing emergency situation and initiate the appropriate actions in this plan to protect personnel, the surrounding environment, and plant equipment from adverse damages.

3. In the event of an emergency where personnel should be protected, the following actions will be immediately performed:

   a. Contact 911 immediately.

   b. Ensure that the following are also contacted:

Title	Name	Office Phone	Cell Phone	Home Phone
Site Leader	Michael Odman	509-594-0163 Ext. 12	541-861-9136	541-861-9136
Emergency Coordinator	Michael Odman	509-394-0163 Ext. 12	541-861-9136	541-861-9136
ROCC	N/A	(561) 694-3636	N/A	N/A
Security Operations	N/A	(561) 694-5000	N/A	N/A

   c. Any work-related permits in effect shall be immediately voided, and personnel involved in such work shall cease all activities.

   d. All sources of ignition, including hot work, burning cigarettes, portable tools and motor vehicles shall be immediately secured.

4. Based upon the type and extent of the emergency, the Site/Plant Leader should assess whether an evacuation should be initiated.

5. The following criteria should be considered in rendering a decision to conduct an evacuation of the facility:

   a. The affected parts of the facility and severity of the emergency.

   b. Restrictions in egress routes caused by the emergency.

   c. Wind direction (if the emergency involves gases/vapors)

   d. People currently located at the facility (day shift, night/weekend shift, visitors/contractors, etc.)

6. If the Site/Plant Leader determines that a facility evacuation is necessary, he/she must determine which type of evacuation to direct.

   a. The following sections describe the types of evacuations that can be performed:

      1.) Immediate Site Evacuation

i. This type of evacuation would be used only in the event of an emergency grave enough to warrant immediate evacuation of all personnel.

ii. In this type of evacuation, operating area personnel should evacuate without regard for shutdown of plant systems or for placing plant systems in the safest mode possible.

iii. This type of evacuation should only be utilized if the safety of personnel in operating areas is in immediate and severe danger, such that any delay in evacuating could result in deaths or injuries to personnel.

iv. The production leader will designate production technicians to assist with the evacuation of any employee, visitor or contractor who may have special needs that could limit their ability to evacuate safely.

2.) Delayed Site Evacuation

i. This type of evacuation would be used in a serious emergency situation where non-essential personnel (those not involved in plant operations or emergency coordination) are immediately evacuated as a precaution, and essential personnel remain in operating areas to perform a controlled shutdown of the facility prior to evacuating.

ii. It is anticipated that this would be the primary type of evacuation used in response to serious emergencies at the facility.

iii. The Site/Plant Leader and/or Facility Emergency Coordinator must assess whether or not the prevailing circumstances warrant keeping essential personnel in plant operating areas to perform a controlled shutdown of the facility.

iv. If personnel will not be exposed to unnecessary danger to perform facility shutdown and/or place the facility into a safe condition, then this is the preferred type of evacuation, as opposed to an Immediate Site Evacuation.

b. Although the Site/Plant Leader (or Facility Emergency Coordinator) may initially designate an evacuation to be a Delayed Site Evacuation, he/she should always keep in mind that conditions may change rapidly, and result in the need to call for an Immediate Site Evacuation.

7. If the Site/Plant Leader (or Facility Emergency Coordinator, as appropriate) determines that an evacuation is necessary, he/she shall ensure that a sounding of the plant alarm is initiated.

   a. In this case, an evacuation alarm should be sounded and all employees/visitors accounted for.

   b. The Site/Plant Leader (or Facility Emergency Coordinator, as appropriate) will designate an employee(s) to assist with the evacuation of any employee, visitor or contractor who may have special needs that could limit their ability to evacuate safely.

8. If an evacuation has been directed, and following the sounding of the evacuation alarm, the Site/Plant Leader shall ensure that instructions for evacuation are communicated to personnel over the plant radio system. These instructions should include the following items at a minimum:

a. The type of evacuation to be performed (Immediate Site Evacuation or Delayed Site Evacuation)

b. The nature of the emergency

c. The location(s) of the emergency

d. Any egress routes that should not be used by evacuating personnel (if known and applicable)

9. If an evacuation has been ordered, personnel shall follow one of the following evacuation procedures, as appropriate, based upon the direction of the Site/Plant Leader and/or Facility Emergency Coordinator:

   a. Immediate Site Evacuation Procedure (APPENDIX 10)

   b. Delayed Site Evacuation Procedure (APPENDIX 11)

10. Perform the appropriate follow-up per the appendices listed on 8.5.1 above.

8.6 EMERGENCY ACTION PLAN ANNUAL DRILLS

1. It is the responsibility of the Site Leader to ensure 4 Emergency Action Plan Drills are performed each year.

   a. Emergency Action Plan Drills are to be held quarterly to ensure all site teammates have gone through at least one drill per year.

2. In addition to performing the drills, the Emergency Action Plan must be reviewed for accuracy.

   a. Make updates as required and forward revised plan to the Plant / Site emergency coordinator.

   b. Ensure site team has been trained on any changes.

3. Each drill's content will be determined by the site leader based on current needs.

4. The type of drill (table top, full functional drill, etc.) will be determined by the site leader based on current needs, but it must include a documented evacuation of the O&M / service building. Every site should have and practice an alternate emergency evacuation path.

5. The targeted drill response time is less than 4 minutes, monitor and record the response time to determine if all employees responded in a timely manner.

6. Each site shall contact the ROCC as part of the drill.

7. A roster of drill attendees and date of drill will be filed with sites' Emergency Action Plan documents.

8. Any gaps or action items that are a result of the drill will be identified, resolved, fully documented, and filed with the sites' Emergency Action Plan documents. Note that MAXIMO is to be used to document actual tasks to be completed to close gaps.

End of Procedure

Note: The following are examples of site emergency plans and may need to be edited to meet each location's specific requirements.

APPENDIX 1 NATURAL DISASTER / SEVERE WEATHER EVENT

1. Natural emergencies considered in this procedure are associated with weather disturbances such as tornadoes, flooding, hurricanes, blizzards, high wind conditions, earthquakes, and severe thunderstorms. Flooding waters, lightning, high winds and heavy rains may be detrimental to the employees, the environment and/or equipment and structures at the facility. Warnings about developing weather emergencies are issued by local radio stations or tracked by onsite weather systems. These warnings should provide adequate information of the approach of weather-related emergency conditions. The Plant Leader at the facility has several means to monitor these weather-related emergencies. These include:

    - Internet access to weather-related web-sites;
    - AM/FM radio to monitor local news stations
    - PGDAPPS WeatherSentry Online

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

    a. The Plant Leader should notify the General Manager.

3. The General Manager shall make a determination about whether or not the plant should be shut down due to the weather situation.

4. Personnel should seek indoor shelter in the plant in a designated secure location, or other reinforced structure. Personnel should remain indoors if the severe weather is affecting the immediate area of the facility.

5. Severe Weather Preparatory Checklist

    Site Leader / Plant Leader or Other Person in Charge

    a. In the event of a natural disaster / severe weather event, where advance warning is known, such as a hurricane, blizzard, etc. the plant / site personnel shall closely coordinate with the PGD Emergency Response Coordinator, during pre and post event activities.

    b. In the event of a natural disaster / severe weather event event such as tornadoes, a severe thunderstorm, high wind conditions, earthquake, etc. where advance warning may not be known, the plant / site shall refer to the site specific operating plans to take the actions necessary to assure the safety of all employees and the public. Additionally, site personnel will take reasonable action to prepare for the event to address environmental exposure and the securing of equipment, consistent with the event conditions. However, under no circumstances are personnel to place themselves in harm's way.

6. The following list represents actions that should be taken at the site in order for it to be secured. The listing is not intended to be all inclusive and will vary in applicability pending advance warning of the on-set of the event.

    - Ensure all personnel evacuate towers if lightning is in the area or if there are other unsafe conditions that warrant climbing to be unsafe.
    - Ensure site personnel are safe and accounted for.

- Review staffing levels and arrange for additional staffing “Storm Riders” as applicable
- Secure plant equipment as necessary and as weather conditions permit, noting that personnel are not to be outdoors in wind conditions greater than 40 mph.
- Seek safe shelter. If in your vehicle in winter, ensure survival kit and enough gas is in place.
- Ensure all portable equipment is stored indoors.
- Ensure that switchgear, load center, and tower doors are closed and latched.
- Ensure that the building doors are closed and latched.
- Place all trashcans in locations not exposed to weather.
- Make a general housekeeping inspection and ensure that all loose objects and debris that could potentially become airborne are secured or inside.
- Ensure all radios are fully charged.
- Secure all CONEX Storage buildings.
- Monitor the weather conditions.
- Ensure that there is an ice plan in place for walkways
- Ensure all compartments accessory doors and closed and latched.
- Ensure all sump pumps are in good working condition.
- Ensure the proper condition and location of all mobile and gantry cranes, hoists, and booms.
- Test the DC emergency and other back-up systems.

Note: Use caution when using self locking CONEX boxes as teammates may get trapped from the inside. Self-locking CONEX boxes pose a risk of locking someone within it which may cause an unsafe condition.

7. The control room operator or other person appointed by the person in charge will:

    - Monitor the weather radio, TV or other monitoring equipment, and report any changes in the situation that could affect site personnel and / or equipment to the Person in Charge.
    - Sound plant alarm system if a tornado or other similar severe weather warning is issued.
    - Follow instructions from the Person In Charge in the case of equipment shutdown is necessary.
    - Notify the ROCC of the potential of a natural disaster / severe weather event .

8. Operations:

    - Operate the plant consistent with instructions provided from the Transmission Operator (TOP). If, the instructions cannot be followed, i.e. safety, environmental, reliability, etc. immediately notify the Transmission Operator to discuss alternative operating actions. Document discussions in the Operators log.
    - When conditions are “forecasted” such as high winds associated with a hurricane, or other related conditions such as floods and / or storm surge, considerations for equipment shutdown should be taken consistent with the sites operating practices/plans and as applicable, general recommendations described in the PGD Hurricane Management (“White Paper”).

Note: The decision to remove units from service will be discussed between Plant Management / Person in charge, the PGD Emergency Response Coordinator, appropriate VP of Operation in conjunction with the respective Transmission Operator, to produce the operation plan for the plant.

Note: For Hurricane prone areas, Power Generation Division has developed a detailed PGD Hurricane Management (“White Paper”) , including the required wind speed shutdown requirements of equipment at Florida sites. General recommendation may be reviewed and executed as applicable to other sites. This document is posted on the PGD SharePoint (link below) for Emergency Response.

PGD SharePoint for Emergency Response

APPENDIX 2 FIRE RESPONSE EVENT

This appendix describes measures the site shall take to prevent, minimize the severity, and proactively prepare for a fire emergency. Refer to SOPR 222 Fire Prevention Plans and Life Safety.

In the event that a fire should occur, the safe and expedient response actions are essential to protect the health and safety of site personnel, the environment, and minimize damage equipment.

Sites shall maintain good housekeeping. Any accumulation of combustible materials shall be reported during the daily Inspection of Watch (IOW) or in the monthly site inspection (SOPR 209).

1. A person discovering a fire shall follow the **RACE** protocol as described below:

   Rescue anyone in danger (only if safe to attempt);

   Alarm, call (via plant cell or 2-way radio) Control Room to report the fire: Person In Charge (PIC) shall make the determination to call 911 and sound the alarm

   Contain the fire (if practical)

   Extinguish the incipient stage fire (only if safe to do so)

Note: Fire-fighting efforts beyond incipient stage shall be performed by only Fire Rescue. A person discovering a fire in its incipient stage shall attempt to extinguish the incipient stage fire only if it meets two primary criteria:

1. Fire can be extinguished or controlled with 1 portable fire extinguisher, and
2. Only if they perceive an adequate level of safety to extinguish the fire.

2. When reporting via 2-way radio, cell, or plant phone provide the following information to the Control Room who will replay it, as appropriate to 911 Dispatch:

   a. Fire has been discovered at _____Location; cause if known.

   b. _____Injuries that have occurred
   c. Actions taken to extinguish an incipient stage fire.

3. The PIC shall determine the following:

   a. Need to evacuate and personnel safety

   b. Equipment or activities to be shut down and/or stopped or isolated.

   c. Instruct Control Room to notify local Fire Rescue and EMS of need for additional assistance

   d. Contact the ROCC, System Operations, PGM, VP, Marketing & Communications, Safety

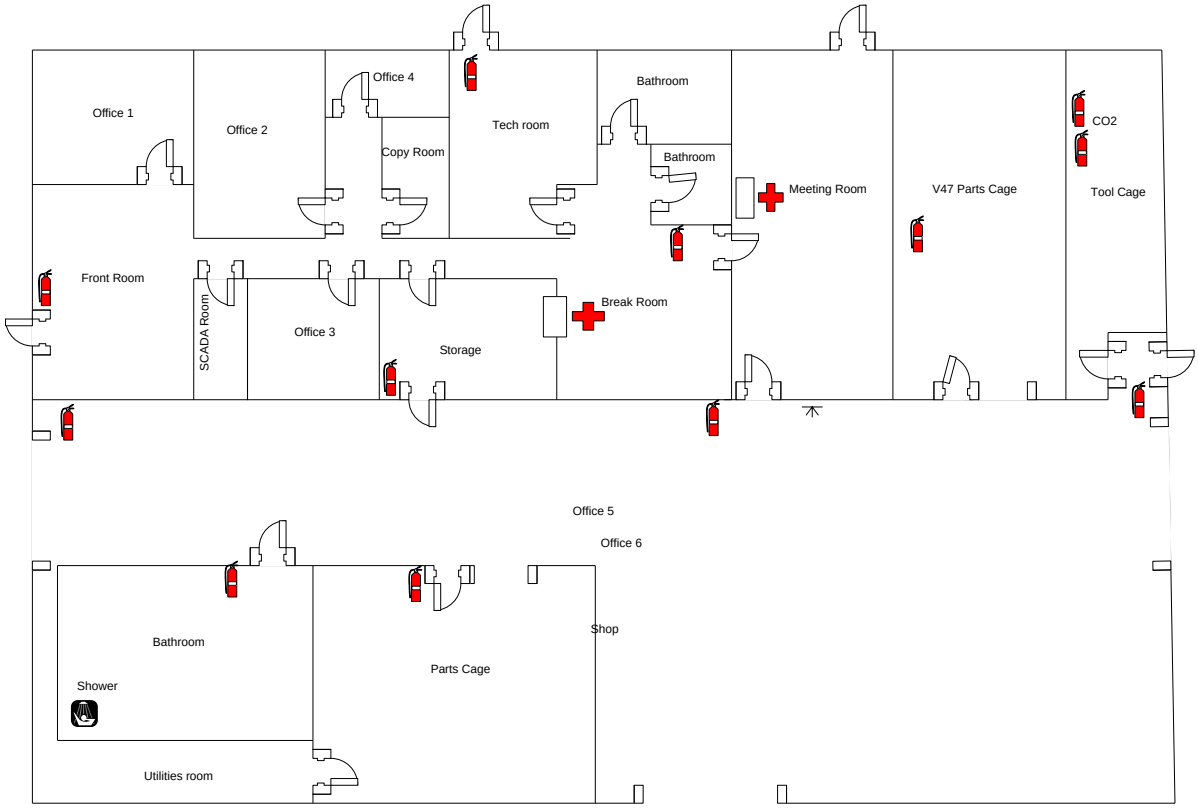
   e. For assistance contact Media Relations at: 561-694-4442

   f. Designated site personnel shall escort emergency service to the fire location and provide specific information about equipment, chemicals, electrical sources, fuel storage, etc.

   All other personnel shall report to the designated muster stations and remain until “all clear” is issued.

4. Sites shall have a Fire Extinguisher List and Location map of deployed fire extinguishers.
5. Personnel shall be provided with initial hands-on training on use of fire extinguishers.

Fire Extinguisher Deployment Plot



Legend

Dry Chemical Extinguisher

CO_2 Extinguisher

First Aid Kit

Eye Wash Station

Shower

Note: The fire extinguishers at the plant location are only to be used for small incipient fires. Only trained firefighters should attempt to mitigate a fire that is beyond the incipient stage. Portable fire extinguishers are classified according to their size and intended use on four classes of fires. The general operating instructions can be remembered by the letters P-A-S-S.

1. **P** Pull the pin at the top of the extinguisher that keeps the handle from being pressed.
2. **A** Aim the nozzle or outlet low toward the base of the fire.
3. **S** Squeeze the handle above the carrying handle to discharge the agent inside.
4. **S** Sweep the nozzle back and forth at the base of the flames to disperse the extinguishing agent.

Fire Classifications

Class A -Fires involving ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics. Water is used in a cooling or quenching effect to reduce the temperature of the burning material below its ignition temperature.

Class B -Fires involving flammable liquids, greases, and gases. The smothering or blanketing effect of oxygen exclusion is most effective. Other extinguishing methods include removal of fuel and temperature reduction.

Class C - Fires involving energized electrical equipment. This fire can sometimes be controlled by a non-conducting extinguishing agent. The safest procedure is always attempt to de-energize high voltage circuits and treat as a Class A or B fire depending upon the fuel involved.

Class D -Fires including combustible metals such as magnesium, titanium, zirconium, sodium, and potassium. The extremely high temperature of some burning metals makes water and other common extinguishing agents ineffective. There is no agent available that will effectively control fires in all combustible metals. Special extinguishing agents are available for control of fire in each of the metals and are marked specifically for that metal.

Water Buffalos

Stateline	**Vansycle I, II**
WSB-52	Duroc sub
HGC-1	A-20
9 MILE SUBSTATION	Campbell Substation
HGS-13	WVS II-29
BGB-23	WVS II-43
O&M Building	

1. Water buffalo is to be primarily used in fire prevention and suppression. A water buffalo will be present at the work site if any welding, grinding, torch or any work that could cause a fire and manned during and 1 hour after work is completed (for fire watch).

2. After use of the water buffalo water tank must be full, gas full and oil checked.

3. WATER BUFFALO MUST BE PLACED BACK TO ITS PROPER LOCATION!!!

APPENDIX 3 PHYSICAL SECURITY EVENT

The purpose of this document is to describe the roles, responsibilities, and the associated actions in response to PHYSICAL SECURITY incidents, which includes but is not limited to INTRUSION, DRONES, BOMB THREATS, SABOTAGE, VANDALISM, TERRORISM or OTHER similar security events at a PGD facility.

RECOGNIZING ACTS OF TERRORISM, HOSTILE INTRUDER & SIGNS OF POTENTIAL VIOLENCE

If a Hostile Intruder enters the **Vansycle I-II & Stateline**, each person shall quickly determine the most reasonable way to protect his/her own life. Visitors and contractors are likely to follow the lead of employees and managers during a hostile intruder situation.

During such an event, each person shall take the following actions, accordingly:

1. EVACUATE
   - Have an escape route and plan in mind
   - Leave your belongings behind
   - Keep hands visible

2. HIDE OUT
   - Hide in area out of intruder's view
   - Block entry to your hiding place and lock the doors
   - Mute or turn off your cell phone

3 TAKE ACTION (As last resort and only when your life is in imminent danger)
   - Attempt to incapacitate the intruder
   - Act with physical aggression and throw items at the intruder

4 Call 911 when it is safe to do so.

For additional information refer to Corporate Security Policy, Procedure #NEE-SEC-1720. Hostile Intruder Response Procedure.

An active shooter may be a current or former employee, or an outsider. Call Corporate Security at 561 694- 5000 or 888 694-6444 or your Human Resources Department if you believe an employee exhibits potentially violent behavior.

For employees, indicators of potentially violent behavior may include one of the following:

- Increased use of alcohol and/or illegal drugs
- Unexplained increase in absenteeism, and/or vague physical complaints
- Depression/Withdrawal; Increased talk of problems at home
- Increased severe mood swings, noticeably unstable or emotional responses
- Increase in unsolicited comments about violence, firearms, other dangerous weapons and crimes

For additional information refer to Corporate Security Safe and Secure Workplace Policies, Procedure #NEE-SEC-1756.

In the event that the site receives threatening correspondence either by phone or by other means of communications, the following actions should be performed immediately:

1. Actions by the person receiving the threat:

    a. Gather as much information as possible from the person making the threat.

        1.) If the threat is via written correspondence, place the correspondence in a location in which it will not be touched or otherwise disturbed until police can be contacted.

        2.) If the threat is being made verbally (phone, or other), communicate and obtain information from the individual making the threat for as long as possible. For phone threats note the time of the call, do not interrupt the caller and describe the tone of voice as well as any background sounds.

    b. Inform the Site/Plant Leader and/or General Manager of the situation.

    c. Contact Security Operations at 561-691-5000

    d. Contact the Renewable Operations Control Center (ROCC) at 561-694-3636

        - Wind 561-694-3636 or Solar 561-694-3600

    e. Contact local law enforcement, as applicable (e.g. 911)

    f. Communicate the Physical Security Event to all on-site personnel.

    g. Document / update the event in the Service Request application in Maximo.

    h. Refer to the PGD Sabotage Reporting procedure at the following link: http://eweb.fpl.com/global/policies/Security%20(SEC)/6.shtml?company=nee

        eWeb>>Policy/Procedure>> Florida Power & Light & FPL Energy Services>>NextEra Energy, Inc>>Security (SEC)>> NEE-SEC-1764 - Security Notifications and Event Reporting

        1.) This document should be consulted in order to assure adherence to the latest definitions and reporting instructions for sabotage and vandalism.

    1. Refer to the following procedure: PGD NERC Event Reporting EOP-004-2 Operating Plan (DOC #: PGD-JB-FPDC-ON-1315181201)

2. During the report describe what you have discovered/witnessed and the location of the affected facilities to include the items outlined below, as available:

    - The date and time of the incident
    - Description of the incident
    - Likely target
    - Number of people involved
    - Suspect and/or vehicle information
    - Type of equipment or material used for the activity

- Generation capacity affected in Megawatts
- Was there an actual or suspected physical attack that could cause a major impact to the Bulk Electrical System (e.g. generator, transformer, fuel supply)?
- Was there any destruction of any security systems (cameras, badge readers, security barriers, locks) or any of its components?
- Was there any actual or suspected cyber or communication attack that could impact the Bulk Electrical System adequacy or vulnerability? (See the Cyber Security Response section for more details regarding Cyber Security events)
- Are there mitigation measures in place to correct the event?
- The name and contact number for the point of contact

3. The Plant Leader and/or General Manager may consider any or all of the following actions to take in response to the threat situation, depending upon the circumstances of the threat:

- Order an evacuation of the facility
- Call 911 for Police or Fire Assistance if they have not already been notified
- Arrange for additional security personnel for the facility.
- Direct plant personnel to commence a controlled shutdown of the facility.
- Direct searches to be performed on vehicles entering the facility.

Note: The latest version of the corporate boomb threat report may be found through the following link: http://eweb.fpl.com/bunit/corpservices/security/ReportIncidents/FormBombThreat.shtml

In case of an evacuation due to a boomb threat, please refer to the information below to maintain safe distance.

BOMB THREAT EVACUATION DISTANCES

THREAT	THREAT DESCRIPTION	EXPLOSIVES CAPACITY[1] (TNT EQUIVALENT)	BUILDING EVACUATION DISTANCE[2]	OUTDOOR EVACUATION DISTANCE[3]
	PIPE BOMB	5 LBS/ 2.3 KG	70 FT/ 21 M	850 FT/ 259 M
	BRIEFCASE/ SUITCASE BOMB	50 LBS/ 23 KG	150 FT/ 46 M	1,850 FT/ 564 M
	COMPACT SEDAN	500 LBS/ 227 KG	320 FT/ 98 M	1,500 FT/ 457 M
	SEDAN	1,000 LBS/ 454 KG	400 FT/ 122 M	1,750 FT/ 534 M
	PASSENGER/ CARGO VAN	4,000 LBS/ 1,814 KG	640 FT/ 195 M	2,750 FT/ 838 M
	SMALL MOVING VAN/DELIVERY TRUCK	10,000 LBS/ 4,536 KG	860 FT/ 263 M	3,750 FT/ 1,143 M
	MOVING VAN/ WATER TRUCK	30,000 LBS/ 13,608 KG	1,240 FT/ 375M	6,500 FT/ 1,982 M
	SEMI-TRAILER	60,000 LBS/ 27,216 KG	1,570 FT/ 475 M	7,000 FT/ 2,134 M

All personnel must either seek shelter inside a building (with some risk) away from windows and exterior walls, or move beyond the Outdoor Evacuation Distance.

Preferred area (beyond this line) for evacuation of people in buildings and mandatory for people outdoors.

[1] Based on maximum volume or weight of explosive (TNT equivalent) that could reasonably fit in a suitcase or vehicle.
[2] Governed by the ability of an unstrengthened building to withstand severe damage or collapse.
[3] Governed by the greater of fragment throw distance or glass breakage/ falling glass hazard distance. Note that pipe and briefcase bombs assume cased charges which throw fragments farther than vehicle bombs.

Note: Never use radios or cell phones near a suspected bomb.

Note: At the first sign of a potential intruder trespassing into a wind turbine, immediately proceed to back off, observe from a safe distance and call Corporate Security as well as the Local Law Enforcement. Law enforcement responders are trained to protect and serve their communities. Emergency responders from the local law enforcement department may require a quick training/briefing to safely enter and climb the tower (if applicable) as well as fall protection equipment. After they provide a verbal command to the potential intruder(s), they may need access to the tower. To the extent possible, facilitate their ability to enter without interfering with their efforts.

APPENDIX 4 CYBER SECURITY EVENT

Detection:
Site Instructions:

1. Site personnel may become aware of a cyber incident or the potential for a cyber incident from any of the following sources:

   - A system page/email alert to an administrator/operator.
   - An employee or Business Unit (BU) that first recognizes a potential incident that needs to be reported to Corporate Security or the IMSC.
   - A Business Unit designated to be contacted by an outside agency such as NERC, FERC, SERC or other outside source to the First Responder.
   - A business partner
   - A manager
   - An outside source
   - Notification may come as part of NEE's Security Notifications and Event Reporting Policy (NEE-SEC-1764 - Security Notifications and Event Reporting to Corporate Security or System Operator).
   - The First Responder should be prepared to describe the incident in detail to the IMSC or Corporate Security. The First Responder is not required to investigate and determine if the event is an actual cyber security incident.
   - The First Responder will notify their Immediate Supervisor and the ROCC.
   - First Responder may reference the PGD Cyber Security Incident Response Plan – First Responder – Diagram (Flow Chart) to guide you through the detection, response and reporting steps.

Link to Corporate First Responder

Note: PGD-CIP-008-DIA-001 PGD Cyber Security Incident response Plan – First Responder – Diagram

2. Site verifies the condition (Fleet Team, Vendors, Information Security, etc. may be required to help determine if event is cyber related).

Response:
Site Instructions:

1. Site makes the unit safe or stabilizes the unit as needed, plans the recovery if appropriate.

2. Site communicates to the appropriate parties:

   a. Immediate Supervisor

   b. Corporate Security or the IMSC

   c. Plant General Manager

d. ROCC

- ROCC will release awareness notification
- ROCC follows PGD-JB-FPDC-ON 1315181201, PGD NERC Security & Event Reporting procedure from ROCC for cyber-attack reporting purposes.

e. Local Emergency Services, if appropriate

f. System Operator, if appropriate

g. Transmission Operator, if appropriate

h. Establishes the appropriate Incident Command structure

i. Executes Incident Command

Recover:
Site Instructions:

1. The team restores the cyber assets affected by the incident to normal operations. This may require reloading data from backup tapes, or reinstalling cyber assets from their original distribution media

2. Once the affected cyber assets have been restored, they are tested to make sure they are no longer vulnerable to the vulnerability that caused the incident

3. The impacted system(s) are tested to ensure they will function correctly when placed back in production

APPENDIX 5 CAPACITY / TRANSMISSION EVENT

Plant Site Roles and Responsibilities

1. Site Control Room Operator, ROCC Operator or Person receiving CAPACITY SHORTFALL

   a. If the communication of a Capacity Short-Fall is for informational purposes and no Operator action is required the individual receiving the communication shall notify the ROCC, Site Leader / Plant Leader or other person in charge providing the information outlined below as available.

   b. If the communication of a Capacity Short-Fall requires Operator Action the Site Control Room Operator, ROCC Operator or Person receiving a CAPACITY SHORTFALL notification from the respective Transmission Operator or other Reliability Entity e.g. Balancing Authority, Reliability Coordinator, shall immediately comply with directive / operating instructions received from the Transmission Operator or provide an explanation as to why the directive / operation instruction cannot be performed i.e. safety, environmental, reliability, regulatory etc.

   c. Three part communication with the Reliability Entity shall be used and the communication shall be logged. The ROCC, Site Leader / Plant Leader or other person in charge shall be contacted and provided the information outlined below as available.

      1.) Content of communication from the Reliability Entity

      2.) Name of individual who called

      3.) Time of call

      4.) The general communication received or the directive / operating instruction received.

2. Site leader/Plant Leader or other Person in Charge

   a. In response to receiving a CAPACITY SHORTFALL communication, the Site leader/Plant Leader or other Person in Charge will:

      1.) Validate the notification with Transmission Operator if appropriate

      2.) Validate the notification with the Control Room Operator

      3.) Once validated, direct the CRO to follow the notification instructions

      4.) Communicate the notification to site management

         a. If site management is not available, communicate directly with the Operations VP.

b. For a NEER facility also contact project business management and ensure that other facilitiy agreements are not violated. It is recommended that the potential for Transmission Operator requests should be vetted and documented before commercial operation of the facility.

5.) Communicate notification to the ROCC

6.) Prepare and review procedures for maximizing output and energy conservation

7.) Advise site personnel not to perform any discretionary maintenance, testing or evolutions (with the exception of approved thermal performance testing) which could present a risk to generation

3. All other site personnel not directly involved with responding

   a. All other personnel that are not directly involved with responding to the CAPACITY SHORTFALL shall not perform any maintenance or activities that would put MW's at risk.

APPENDIX 6 ENVIRONMENTAL EVENT

Site Spill Kit Locations

Stateline	**Vansycle I, II**
O&M Building	A-04
9 MILE SUB	A-28
BGB-23	B-06
PB-73	Campbell Substation
WSB-52	Duroc Substation
HGC-01	
HGJ-13	
HGS-13	

1. All spill kits must be restocked within 24hrs
2. Work orders must be completed on the spill and items used
3. Spill and used items must be reported to the Environmental Coordinator

The spill or release of any chemical /oil or Heat Transfer Fluid is a potentially serious event, and appropriate response actions must be taken to minimize health hazards to personnel, as well as potential impacts to the environment. It is the policy of the facility that plant personnel will not respond to spills/releases, but will instead call for trained outside responders to perform this function. For the purpose of clarification to plant personnel, the term “respond” in this context refers to actions taken to perform cleanup operations of spilled substances, and in some cases may even take the meaning of actually stopping the source of a spill. Taking basic response actions to a spill such as setting up barricades, placing containment media and stopping spills in situations such as the Step 1 Example below should not be construed to be acting in the role of a “responder”, as it is defined in OSHA HAZWOPER regulations.

The basic actions to be taken in response to a chemical or oil / HTF spill or release are the following:

1. If the spill or release is the direct result of an operational action performed on the system from which the release has originated, the person who performed the action should attempt to stop the release (if possible) if it can be stopped without incurring additional personal exposure to the substance.

Example: A person opens the drain valve on a line that results in an unexpected release. If the person can immediately stop the release by closing the valve, this action should be taken if no additional exposure to the chemical will occur by doing so.

2. The person discovering a spill/release should immediately move to a location that is a safe distance from the affected area,

    a. If it is safe to do so under prevailing conditions, remain within observation distance.

b. If safe conditions are in doubt, do not risk exposure – leave the area immediately.

3. The person discovering the spill should look for other personnel in the area, and warn them by any means available of the event that has occurred. The Site/Plant Leader should be notified immediately over the radio. Information provided should include all of the following that are known:

   a. What type of chemical has been spilled/released?

   b. The location(s) of the spill/release.

   c. If the source of the spill/release has been stopped

   d. If any injuries or chemical exposure has occurred to personnel.

   e. Boundaries describing the area of the spill.

   f. Whether or not the spill is contained.

   g. Quantity released (if it can be estimated).

   h. Environmental impacts (water bodies, streams, ground, roadways)

4. Based upon the report from the person discovering the spill, the Site/Plant Leader shall evaluate whether the circumstances pose a threat to the surrounding community or the environment.

   a. If a threat is imposed to the community or environment, 911 should be notified immediately. The Site/Plant Leader shall also contact at least one of the following specialized emergency responders:

Organization	Expected Response Time	Contact Number
Clean Harbors	**24** hrs	**800-645-8265**

5. The Plant Environmental Lead shall make a determination as to whether the spill/release is of a quantity that must be reported to agencies, and if so, which agencies to notify. To perform this step, the Site/Plant Leader shall use the Spill Prevention Control and Countermeasure Plan (SPCC). The Plant Environmental Leader shall ensure that all required notifications are made.

6. The Site/Plant Leader or the Plant Environmental Leader shall make notification to the ROCC as soon as possible so the ROCC can issue a “deviation” to a pre-determined distribution list. If the Environmental Event is significant where outside organizations may request information the distribution may be expanded to include employees from Corporate Security, Media Relations, and the Corporate Emergency Preparedness Group. The PGD Emergency Response Coordinator will be made aware of the situation via the ROCC notification, or by the Operating Fleet VP, or by a direct call from the site depending on the magnitude of the incident.

7. If applicable, the Site/Plant Leader or the Plant Environmental Leader shall closely coordinate with the PGD Emergency Response Coordinator, during pre and post event activities.

8. While remaining at a safe distance from the spill/release, the person discovering the spill should locate and place temporary containment around the outer boundaries of the spill, and place absorbent mats over any plant drains that are near the location of the spill.

Note: This should be performed only if it is safe to do so without risking chemical exposure.

9. The person discovering the spill should attempt to barricade, restrict access or otherwise mark off safe boundaries around the spill to prevent others from inadvertently approaching the spill area.

Note: This should be performed only if it is safe to do so without risking chemical exposure.

10. The person discovering the spill should remain at a safe distance from the source of the spill/release until additional assistance or instructions are received.

11. Unless the person discovering the spill has reported unsafe conditions for approach of the area, the Plant Environmental Leader shall immediately proceed to the spill area to evaluate the severity of the incident.

Note: If any personnel are discovered to be unconscious or otherwise incapacitated upon approach to the spill scene, all personnel must immediately move away to a safe distance from the unknown threat.

12. The Plant Leader shall evaluate the adequacy of containment, barricades, and any other efforts that have been taken to prevent the spill from migrating to any additional areas or systems, and direct additional actions to be performed (unless it is deemed that any additional actions are unsafe to perform).

    a. The adequacy or need for PPE should also be assessed. Upon completing this assessment, the Site/Plant Leader shall notify/inform the Facility Emergency Coordinator of the status of the emergency.

13. Once the Plant Leader (or Emergency Coordinator, as appropriate) has determined that adequate containment and barricading of the spill area exists, he/she shall ensure that an adequately trained observer remains positioned a safe distance from the scene to observe the status of the spill and arrange for proper cleanup/mitigation actions.

APPENDIX 7 GAS PIPELINE EVENT

Not Applicable for Wind / Solar Sites

APPENDIX 8 OIL PIPELINE EVENT

Not Applicable for Wind / Solar Sites

APPENDIX 9 PANDEMIC EVENT

Refer to the PGD (Power Generation Division) Pandemic Plan. Link to Corporate Pandemic Plan on SharePoint

APPENDIX 10 IMMEDIATE SITE EVACUATION PROCEDURE

1. Personnel present in the Administrative Building or control room shall immediately take the following actions:

    a. Locate and obtain the visitor/contractor sign-in sheet.

    b. Locate and obtain all immediately accessible hand-held radios.

    c. Determine the safest muster area to proceed to, depending upon the known circumstances of the emergency (as indicated in Appendix 3).

    d. Assign designated plant employees to assist any employees or visitors with special needs that would restrict their ability to get safely and expediently to the muster area.

Note: The *primary* muster area must be a predetermined location; alternate muster areas are to be selected only when egress routes to the primary muster area are unsafe to proceed along.

    e. Pass the following information over the plant radio system:

        1.) The muster area the employees will be proceeding to.

        2.) Visitors/contractors known to be in the operating areas (as indicated by the visitor/contractor sign-in sheet).

    f. Once emergency personnel have completed the preceding steps, they shall immediately proceed to their designated muster area.

    g. Personnel in the Administrative Building should not delay in evacuating, or wait on other personnel that they anticipate may arrive.

    h. Upon arriving at the designated muster area(s), the group shall designate a Person-in-Charge and take a head count of all personnel who are at the muster area, including contractors and visitors.

        1.) After a roll call of all personnel present at the muster area is taken, the Person-in-Charge shall identify which operating area personnel are not accounted for.

        2.) The Person-in-Charge will query by radio or cell phone for personnel who are unaccounted for.

        3.) The Person-in-Charge shall establish radio communication with the Emergency Coordinator (if applicable) and relay information on personnel who are unaccounted for.

    i. All personnel at the muster location shall remain at the muster location until an “ALL CLEAR” signal is sounded, or if directed by the Emergency Coordinator (if applicable) to leave the muster location.

        1.) The “ALL CLEAR” signal will be communicated by Radio or cellular telephone.

j. The Person-in-Charge shall continuously monitor the plant radio system when at the muster location.

2. Personnel present in the facility operating area (other than Administrative Building) shall immediately perform the following actions:

   a. If not monitoring the plant radio system, immediately turn on hand-held radios.

   b. Proceed to the designated muster area, unless the egress route to the muster area is not safe for travel. In such a case, proceed to an alternate muster area.

   c. Instruct any personnel (including visitors and contractors) who are seen along the way to proceed to the designated muster area.

   d. Upon reaching the appropriate muster area, report to the Person-in-Charge and continue to monitor the plant radio system.

      1.) If no other personnel are present at the muster area upon arrival, communicate this to the Site/Plant Leader.

3. Personnel not in the operating areas of the plant (to include the administration building and inside parking areas) shall immediately perform the following actions:

   a. Locate and obtain all immediately accessible hand-held radios.

   b. Proceed to the designated muster area.

      1.) A Person-in-Charge shall be designated for the muster area. In many cases, this will be the Emergency Coordinator.

         i. In the event that the Emergency Coordinator is in plant operating areas or has proceeded to an alternate muster area, he/she may elect to designate the muster area Person-in-Charge to act in the capacity of Emergency Coordinator during the emergency.

         ii. If the Emergency Coordinator is not present at the muster area, the Person-in-Charge at the muster area will coordinate outside responding agency activities until the Emergency Coordinator arrives.

         iii. The Person-in-Charge shall establish radio communications with operating area personnel and compare roll call lists to determine if any personnel are unaccounted for in the facility.

APPENDIX 11 DELAYED SITE EVACUATION PROCEDURE

1. Personnel present in the Administrative Building shall immediately perform the following actions:

    a. Take necessary operating actions to place the facility in the most stable condition, based upon the type of emergency.

        1.) Communicate names of visitors/contractors currently in the operating areas to outside operating personnel.

        2.) Instruct outside operating personnel to locate and direct all visitors/contractors to proceed to the Administrative Building for egress instructions.

    b. When all visitors, contractors and non-essential operating personnel have been accounted for and are present in the Administrative Building, the Site/Plant Leader (or Emergency Coordinator, as appropriate) shall designate a trained person to escort all non-essential personnel to the designated muster area along the safest egress route.

    c. Locate and obtain the visitor/contractor sign-in sheet

    d. Notify the Emergency Coordinator and Production Staff of the current facility status, and evacuation details.

    e. Perform a controlled shutdown in accordance with appropriate procedures and directions from the Emergency Coordinator.

    f. Once the shutdown has been completed, all essential personnel shall gather in the Administrative Building and take roll call.

    g. When all essential operating personnel are present and accounted for, evacuation to the designated muster area shall be performed, unless the egress route is not safe for travel.

        1.) If evacuation route to the designated muster area is not safe for travel, proceed to the alternate muster area.

2. Personnel present in the facility operating areas (other than Administrative Building) shall immediately perform the following actions:

    a. Continuously monitor the radio system for information and instructions.

    b. Perform immediate response actions, as appropriate, to place the facility in the most stable condition, based upon the type of emergency.

    c. Locate and direct non-essential personnel to proceed to the Administrative Building immediately.

    d. Perform facility shutdown instructions as directed by the Site/Plant Leader.

    e. Upon completion of shutdown, or upon direction by the Emergency Coordinator, proceed to the Administrative Building for instructions.

3. Personnel not in the operating areas of the facility (to include the administration building and parking areas) shall immediately perform the following actions:

    a. Locate and obtain all immediately accessible hand-held radios.

    b. Proceed to the designated muster area (see Appendix12).

    c. A Person-in-Charge shall be designated for the muster area.

        1.) The Person-in-Charge shall establish radio communications with operating area personnel and compare roll call lists to determine if any personnel are unaccounted for in the facility.

        2.) The Person-in-Charge at the designated muster area will coordinate outside responding agency activities and provide assistance (to include personnel, resources, and administrative functions) to the Administrative Building as directed by the Emergency Coordinator and/or Site/Plant Leader.

4. The Emergency Coordinator shall immediately perform the following actions:

    a. Proceed to the Administrative Building, or to the location on the facility most appropriate for directing response actions for the emergency.

    b. Coordinate actions related to the emergency and provide directions to muster area Persons-in-Charge.

    c. In the event that the emergency escalates in severity or immediate danger to personnel, direct immediate evacuation of all essential operating personnel involved in plant shutdown activities.

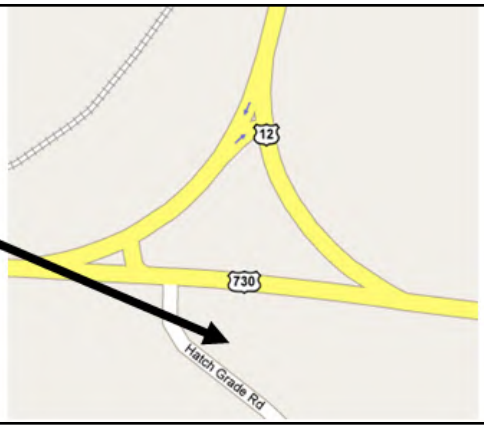
APPENDIX 12 DESIGNATED EGRESS ROUTES & MUSTER AREAS FOR EVACUATIONS

Primary Muster Area:

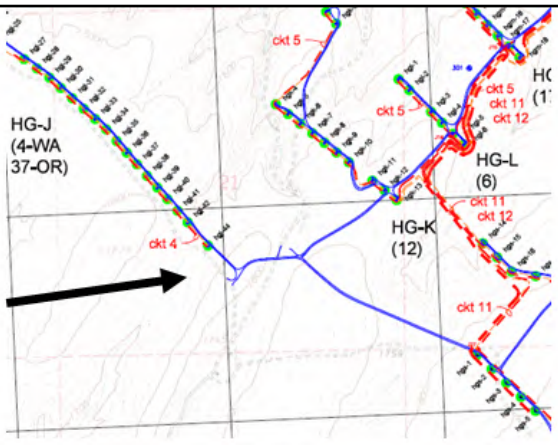
Outside the fence on the Northwest corner of the shop yard.

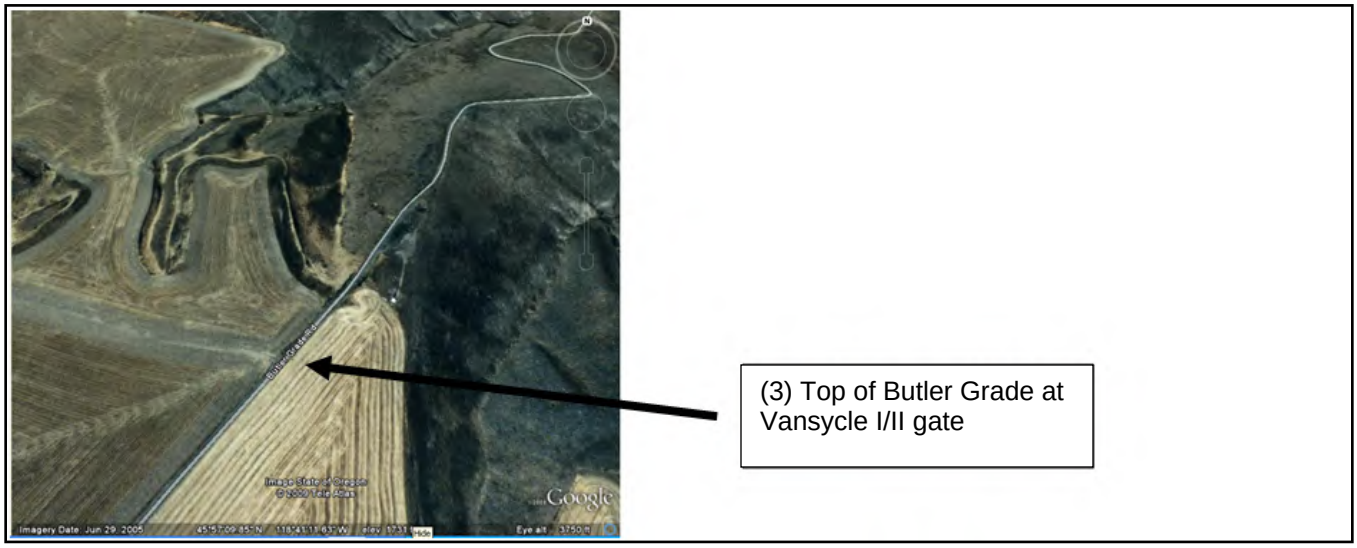
Alternate Muster Areas:

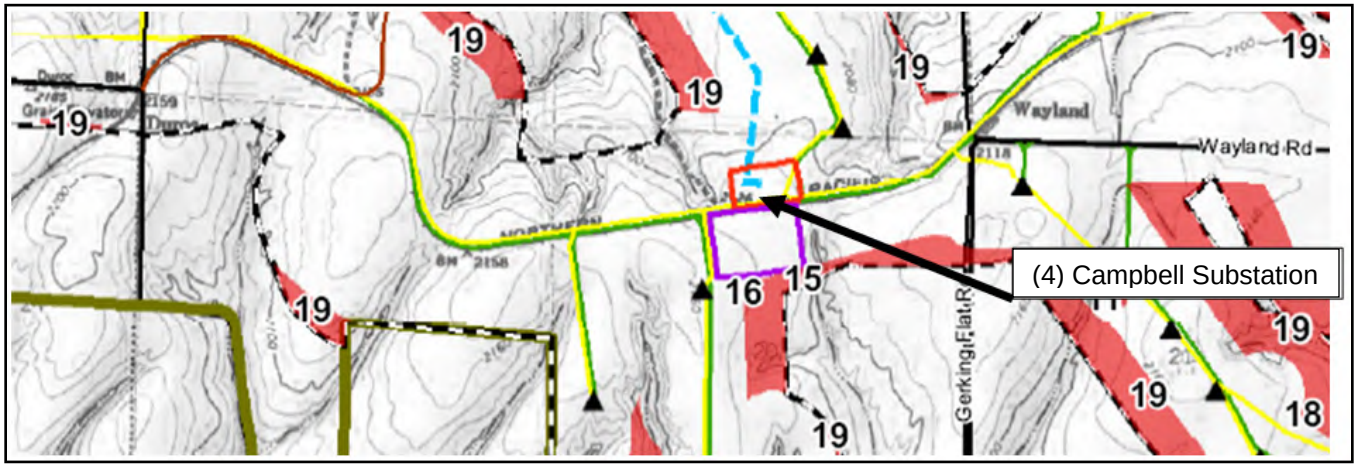
(1) Gravel parking area south of Wallula Junction (junction between HWY 12 and HWY 730)



(2) Gravel parking area between J-row and K, L, M, and N-rows







Note: Each plant will assign emergency muster points. These are the locations that all employees, visitors and contractors are to report to in the event of an emergency, or a drill. Muster points should be identified with proper signage and the site manager should have means of communication. In the event of an emergency the site manager or designee should bring the plant sign in book to the muster point or designate someone to provide the information from the sign in book so that the site manager can account for all employees and visitors. The location of the muster points will be shown to all contractors and visitors as a part of the initial plant orientation. Exit routes will be kept clear of clutter, and easily identified.

The Primary Muster Area is located: **Administrative Building / O&M Building: outside the fence on the Northwest corner fo the shop yard.**

The Alternate Muster Areas are located:

(1) Wallula Junction: gravel parking area on the South side of the junction between HWY 12 and HWY 730.

(2) Gravel parking area Southeast of J-row and Southwest of K, L, M, and N-rows where the farm equipment is stored.

(3) Butler Grade: top of Butler Grade Road at Vansycle I/II gate—stay clear of the road and gate.

(4) Campbell Substation: stay clear of the road and park out of the way.

The Primary Muster Area is the preferred gathering point for personnel, and should be used during evacuations unless the emergency has rendered egress routes to the Primary Muster Area unsafe for travel. The Alternate Muster Area is the alternate gathering point for such circumstances.

APPENDIX 13 PERSONNEL INJURIES AND SERIOUS HEALTH CONDITIONS

The following sections provide basic guidelines for response actions to be taken in the event of emergencies related to personnel health.

Although facility personnel should take the most aggressive response actions that are prudent in an emergency situation, the first and foremost action will be to call 911 to initiate the response of trained outside medical responders.

To prepare facility personnel for such contingencies, it will be the facility policy that all operating personnel and as many other personnel as possible should be trained in CPR (Cardiopulmonary Resuscitation), Blood Borne Pathegens and in the use of an AED (Automated External Defibrillator) if one is available.

Each site will maintain at least one well stocked first aid kit at the control room or O&M building and one in each site vehicle. These will be inspected at least monthly. Each plant will determine the locations of their nearest non-emergency Worker's Compensation approved medical facility as well as the Corporate Nurse and post the name, address and phone number. In the event of an emergency, the 911 responders will determine the best location for emergency care.

If present on site, the AED will be maintained at the facility at a designated location known and accessible to all staff.

Automated External Defibrillators (AED) – NextEra sites with AEDs will perform the following:

- Notify the local EMS of the existence, location, and type of AED (California requirement only)
- Test the AED every 6 months and after each use, per the manufacture's requirements
- Inspect all AEDs at least every 90 days and document the inspection; including verification the batteries and pads have not expired.
- Maintain records of maintenance and testing.
- Annually notify employees of location(s) of AEDs.
- Provide information on how to take CPR or AED training.
- Annually demonstrate how to use an AED.
- Post instructions (14-point font) next to the unit on how to use the AED.

SPEC PAKS

The Patient Extraction System (Spec Pak) combines back board and cervical collar with rescue harness. It restricts spinal movement, enhances rescue in tight spaces, and can be used to guide an injured teammate over obstacles without getting caught on them.

Spec Paks are located in the O&M Building and the Campbell Substation.

1. Basic First Response Actions

a. Check for responsiveness. Responsiveness is when the person is able to respond when you call their name or touch them.

b. If the person is unresponsive, immediately call 911 for outside medical assistance and ask other personnel to bring the AED (if present) to the scene.

1.) Other personnel should assist with 911 notifications and expediting the delivery of the AED to the scene.

c. Check to see if the victim is breathing normally.

1.) If no signs of breathing are observed, the responder should check for visible signs of airway blockage.

i. If obvious signs of airway blockage are noticed, attempt to remove the blockage

2.) Initiate two rescue breaths into the victim.

3.) After the rescue breaths, a pulse should be checked for on neck.

i. If a pulse is present, continue with recovery breathing, but do not initiate chest compressions.

ii. If no pulse is observed, commence CPR with assisted breathing.

d. If CPR is being performed and the AED arrives to the scene, direct an assistant to begin setting up the AED for operation on the victim.

1.) CPR should be continued during the time that the AED is being set up.

2.) If the AED is placed into operation, remain near the victim and follow all AED instructions to ensure safety and proper victim monitoring. Maintain the victim with AED monitoring until trained medical responders arrive at the scene.

e. If the victim is responsive, but shows signs of shock or has an obvious severe injury, call 911 immediately and take additional actions as described in the sections below.

f. If the victim has obvious broken bones or is bleeding profusely or may have neck or spine injuries, do not attempt to move the victim unless their immediate safety would be jeopardiazed by leaving them in that particular location. Make the victim as comfortable as possible, and apply pressure to mitigate areas of profuse bleeding until trained medical personnel arrive at the scene.

g. Immobilize all injured parts of the victim.

h. Prepare victim for transportation if the victim can be safely moved.

2. Physical Shock

a. Symptoms

1.) Pallid face.

2.) Cool and moist skin.

3.) Shallow and irregular breathing.

4.) Perspiration appearing on the victim's upper lip and forehead.

5.) Increased, but faint pulse rate.

6.) Nausea.

7.) Detached semi conscious attitude towards what is occurring around him/her.

b. Treatment

1.) Request professional medical aid immediately.

2.) Remain with and attempt to calm the victim.

3. Electric Shock <50 volts (For ≥50 volts, refer to NEE-SAF-1610 Electric Shock – Required Medical Evaluation)

a. Symptoms

1.) Pale bluish skin that is clammy and mottled in appearance.

2.) Unconsciousness. No indications that the victim is breathing.

b. Treatment

1.) Turn off electricity if possible.

2.) Call for professional medical assistance and an ambulance immediately.

3.) Remove electric contact from victim with non conducting material.

4.) Perform CPR and call for the AED, if required.

4. Burns

a. Symptoms

1.) Deep red color; or

2.) Blisters; or

3.) Exposed flesh.

b. Treatment

1.) Cooled immediately if at all possible, and

2.) Free of any jewelry or metal if it is safe to remove it.

3.) Do not pull away clothing from burned skin tissue.

4.) Do not apply any ointment to burn area.

5.) Seek professional medical assistance as soon as possible.

5. Heat Stroke

a. Symptoms

1.) Face will be red

2.) Face will be dry to the touch.

3.) The pulse will be extremely strong and fast.

b. Treatment

1.) Rapidly cooled or death can occur.

2.) Sponged with water.

3.) Fanned to allow evaporation to occur.

4.) Moved into a cool environment.

6. Heat Exhaustion

a. Symptoms

1.) Increased heart rate

2.) Exhaustion can follow.

3.) An impaired ability to think can exist.

4.) A lack of coordination may be present.

5.) Body temperature may be normal.

6.) Skin can be clammy.

7.) Weakness and dizziness may result.

b. Treatment

1.) Remove from the hot environment.

2.) Lay victim on their back with feet slightly elevated.

APPENDIX 13 PERSONNEL INJURIES AND SERIOUS HEALTH CONDITIONS (SUPPLEMENTAL INFORMATION FOR WIND ONLY)

Note: For NEER Wind Fleet only, reference site specific Code Blue Books for additional relevant information regarding injury and health conditions. These books shall be reviewed annually by site personnel during one of the quarterly drills.

This FACILITY NAME Code Blue Book is stored in the OpModel under ENTER OPMODEL FILE PATH HERE.

WIND CODE BLUE PACKETS
Each wind site shall fill out and maintain an emergency quick reference guide “Code Blue” packet. The sites will supply each truck or crew with 2 code blue packets. One shall be kept in the work truck and the second in the emergency up-tower kit. Central maintenance shall also be supplied with 2 code blue packet per truck, at each site they work at.

Each site shall review their code blue annually to ensure the information is current. A new PM shall be created in MAXIMO to ensure this is completed.

New wind sites Download the NextEra Wind Code Blue - Template from the OpModel under PGD >> Safety >> Safety Procedures >> Next Era Safety Procedures [SMS] >> Forms. Fill it out and then send the file to wind representative for proofreading.

Updating code blue packets
Enter Here the current instructions for updating the code blue packets.

Ordering code blue packets
Enter Here the current instructions for ordering the code blue packets.

Attachment E: Revegetation Plan

Stateline Wind Project: Revegetation Plan
[REVISED OCTOBER 10, 2008]

1. Introduction

The certificate holder is operating a wind power project in Oregon known as the "Stateline Wind Project" or "Stateline Energy Center." This Revegetation Plan addresses only the parts of the project that are located in Oregon, although there are associated wind energy facilities in Washington that are part of the overall project. The turbine strings are spread out along several ridgecrests located approximately six miles southwest of the town of Touchet, Washington. In addition to the turbine strings, additional facilities such as access roads, underground and overhead transmission lines and a substation are part of the project.

The areas of temporary construction disturbance include cultivated or otherwise developed agricultural land (cropland) as well as areas of grassland, and shrub-steppe habitat . This Revegetation Plan addresses revegetation of areas temporarily disturbed by construction activities. The goal for temporarily disturbed areas (such as road shoulders, underground electric cable trenches and the temporarily disturbed area around tower sites) is to return the disturbed habitat to pre-construction conditions or better.

In order to achieve these habitat mitigation objectives, this plan has been prepared to guide the revegetation efforts. Seed mixes, planting methods and weed control techniques have been developed specifically for the project area through consultations with the Oregon Department of Fish and Wildlife (ODFW), reviews of current literature and site visits by revegetation specialists. The plan also specifies monitoring procedures to evaluate the success of the revegetation efforts, including recommended remediative action should initial revegetation efforts prove unsuccessful in certain areas.

In addition to areas temporarily disturbed during construction of the project, certain areas are permanently affected by the placement of project facilities for the life of the project. These permanently disturbed areas include the location of new or widened roads, the turbine pad areas and the substation area. These permanent impacts to habitat will be mitigated by the enhancement of degraded habitat within the project area at a 1:1 ratio. The amount and procedures to mitigate these permanently disturbed areas are dealt with in a separate Habitat Mitigation Plan.

2. Project Area

2.1. Project Description

There are two project layouts being considered for Stateline 3. One consists of up to 43 Siemens 2.3-93 wind turbines, the other consists of up to 67 GE 1.5 xle or sle wind turbines. To adequately provide an assessment of habitat impacts, and to provide for the potential of adjustment to the future facility design, the GE layout has the greatest amount of habitat disturbance and is being considered for revegetation. The Stateline 3 wind power project consists of 67 GE XLE turbines, with an aggregate nominal nameplate electrical generating capacity up to 100.5 MW.. Each structure is approximately 242 feet (ft.) tall (at nacelle), with a rotor diameter of 305 ft. Each turbine is supported on a concrete pad approximately 40 ft. by 40

ft. The turbines are linked by access roads and underground and aboveground 34.5 kV transmission lines. In addition, the project includes a 230 kV substation and a 16-mile 230-kV transmission line (with 12.9 miles of transmission line in Oregon and 3.1 miles of transmission line in Washington).

Access roads are needed in several areas to transport equipment and personnel to the facilities. In many cases, existing roads are adequate to provide access, but some new roads and expansion of some existing roads are needed. Overhead transmission lines are used to conduct electricity from the turbine strings to a substation and from the substation to existing transmission lines in the Washington.

In addition, areas of temporary disturbance occur during construction of the project. Laydown areas and equipment work areas at the tower sites are needed to construct the turbines. Construction of access roads also requires the temporary disturbance of habitat in addition to permanent disturbance of the roadbed. In addition, construction of powerlines, both above and below ground, temporarily affects habitat. For the underground lines, temporary impacts are similar to pipeline installation, while for the overhead lines, disturbance is primarily limited to the tower bases. Additionally, miscellaneous facilities such as staging areas, parking lots and turnouts are temporarily disturbed during construction.

2.2. Physiography, Geology, and Soils

The turbine string sites are located on ridgetops that generally run along northwest-southeast lines. Slopes along the strings themselves are gentle, typically ranging from 0° to 10°. Slopes down from the ridgetops are variable, generally ranging from 5° to 30°.

Elevations of the turbines strings range from 1,760 ft. above mean sea level to 1,100 ft. Elevations for the access roads and proposed transmission line near Ninemile Canyon range from 1,100 ft. down to 385 ft.

Soils within the project area are primarily basalt-derived loams (NRCS 1994, NRCS 1988). The ridgetops, where the turbines will be located, are typically shallow lithosols. Other areas have deeper soils, which have often been cultivated for small grain production or seeded as grazing lands.

2.3. Climate

The project area averages 10 to 15 inches of precipitation annually, most of which falls from October through March. The average annual air temperature is 50° to 53° Fahrenheit, and the average frost-free period is 135 to 170 days (NRCS 1988). Strong winds are often present along the ridgetops.

2.4. General Vegetation

Potential vegetation communities in the project vicinity are primarily bunchgrass and shrub-steppe associations. On the deeper-soiled habitats, *Agropyron spicatum* (bluebunch wheatgrass) and *Festuca idahoensis* (Idaho fescue) are the dominant climax native grasses, and *Artemisia tridentata* (big sagebrush) is the climax shrub associate. Along some of the ridgetops shallow-soiled lithosol communities are present, dominated by *Poa secunda* (Sandberg's bluegrass) and various forb species such as *Eriogonum compositum* (northern buckwheat) and *Phlox hoodii* (Hood's phlox).

Actual vegetation in the general vicinity, however, is heavily disturbed and modified in many places. Much of the area has been cultivated with monoculture crops of wheat and other small grains. Most of the remaining habitat is maintained at an early seral stage due to a number of disturbance factors. Weedy species are prevalent throughout, and extensive habitat modification has taken place. *Bromus tectorum* (cheatgrass) and other annual grasses are the dominant species on many of the deeper-soiled habitats. *Chrysothamnus* spp. (rabbitbrushes) are the dominant shrubs in many of the shrub-steppe habitats. The shallow-soiled communities have also been heavily modified over the years.

2.5. Land Use

The project area is privately owned by several agricultural operators. As mentioned above, much of the area is used for cattle grazing and agricultural activities. The cultivated land is used for production of small grain crops such as wheat or barley. The grazed land is either native shrub-steppe or land previously set aside in the federal Conservation Reserve Program. Some of the native habitats on shallow soils receive little or no grazing.

2.6. Environmental Conditions

A variety of environmental conditions within the project area make the establishment of desirable plant species difficult. Low precipitation and sandy soils provide very little available moisture for germinating seeds. In addition, extensive past and present disturbance to the vegetative communities has created many areas dominated by non-native, weedy species. These species could spread to areas disturbed by construction activities and compete with planted species for the limited resources. The noxious weed *Centaurea solstitialis* (star thistle) is particularly abundant in the project area. Finally, high winds in the area further complicate efforts to establish desirable vegetation.

3. Revegetation Procedures

The following methods are recommended for all areas of temporary disturbance in the upland habitats throughout the project area. Section 3.3 addresses restoration of temporarily disturbed riparian habitat.

3.1. Seed Mixture

In consultation with ODFW, one seed mixture was developed for use in revegetating all temporarily disturbed upland habitats within the project area. Because the project area takes in a variety of different habitats (*e.g.* deep-soiled habitats, shallow-soiled lithosol communities) it was necessary to use several different species groups, each adapted to a different soil type. The development of a separate species mix for each habitat was considered, but rejected as being impractical in the project area due to the close intermingling of habitat types within the facilities corridors. In order to re-establish plant communities of most value to wildlife, only native species are used. Species were selected based on their tolerance to xeric (low-moisture) conditions, the availability of their seed, and a variety of other factors.

3.2. Seed Planting Methods

The choice of methods should be based on site-specific factors such as slope, erosion potential and the size of the area in need of revegetation. Planting should be done at the

appropriate time of year based on weather conditions and timing of the disturbance. Disturbed, unseeded ground may require chemical or mechanical weed control before weeds have a chance to go to seed.

3.2.1 Broadcast Method

1. Obtain the seed from a reputable source to avoid contamination.
2. Broadcast the seed mixture at the given rate.
3. Apply locally obtained, weed free straw at a rate of 2 tons per acre immediately after broadcasting the seed.
4. Crimp straw into the ground using a tractor-mounted straw crimper.

3.2.2 Hydroseed Method

1. Obtain the seed from a reputable source to avoid contamination.
2. Broadcast the seed mixture at the given rate.
3. Apply wood cellulose fiber mulch (mixed with a tackifier) at a rate of 1 ton per acre immediately after broadcasting the seed.

3.2.3 Drill Method

1. Obtain the seed from a reputable source to avoid contamination.
2. Plant seed mixture at ½ the rate using a seed drill.
3. Apply locally obtained, weed free straw at a rate of 2 tons per acre immediately after broadcasting the seed.
4. Crimp straw into the ground using a tractor-mounted straw crimper.

3.3. Restoration of Riparian Areas

The certificate holder shall seed all temporarily disturbed riparian areas (stream bed alterations associated with road crossings) with grass species using seed mixtures and seeding methods appropriate for the site. In addition, at the road crossing located immediately west of the Stateline 3 substation, the certificate holder shall plant bare root willow shrub stock. The certificate holder shall plant twenty shrubs along the disturbed stream bank to provide shrub cover for wildlife and for moderating stream temperatures.

3.4. 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 ODFW and Umatilla 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 112 of the Site Certificate.

4. Monitoring

4.1. Monitoring Procedures

In the fall of the year following each seeding and continuing annually for five years, a qualified independent botanist or revegetation specialist will examine all reseeded riparian areas and a representative cross-section of the revegetated upland sites and report to the Oregon Office of Energy. Care will be taken to survey areas in all the major habitat types and throughout the geographic extent of the project area. At least 20% of the revegetated acreage will be examined.

In consultation with the ODFW, the certificate holder shall choose reference sites near the revegetated areas to represent the target conditions for the revegetation effort. For each revegetated area, the certificate holder shall choose a reference site in the immediate vicinity that represents the realistically attainable vegetative conditions for that area. The certificate holder shall choose these reference sites based on factors including land use patterns in the area, soil type, aspect and noxious weed densities. The goal in choosing these reference sites is to identify areas that provide a realistically attainable goal that will determine the success threshold level for a particular revegetated area. It is anticipated that it will be necessary to choose several reference sites to adequately represent all the various habitat conditions within the project area.

The certificate holder shall choose the reference sites during or after field visits by the revegetation monitoring specialist and ODFW personnel. Once the reference sites are chosen, they will be used for comparison during all subsequent monitoring visits, unless some event (such as wildfire) significantly changes habitat conditions so that a particular reference site no longer represents a realistically attainable habitat goal for the associated revegetated area. In that case, the certificate holder shall choose a new reference site.

At each monitoring location, the investigator shall evaluate the following parameters (both within the revegetated area and within the reference site):

- Degree of erosion due to construction activities (high, moderate or low).
- Average stems of desirable vegetation per square foot.

The investigator shall evaluate the revegetated area and the reference site separately to allow for later determination of revegetation success.

4.2. Success Criteria

A temporarily disturbed area is successfully revegetated when the average desirable vegetation stem density within the revegetated area is greater than, or equal to, that observed in the comparable reference site.

For riparian areas, the success criterion for willow shrub establishment is survival of 10 of the 20 planted willow shrubs. Revegetation success for seeded grass species is based on a comparison with a nearby riparian reference area (selected by the certificate holder and approved by ODFW). A reseeded riparian area is successfully revegetated when the stem density of desirable species (stems per square foot) in the reseeded area is equal to or greater than the density observed in the reference area.

If success criteria are not met for a site at the time of a monitoring inspection, the investigator may recommend reseeding. In small areas (less than 0.2 acres) where weed encroachment may make native seed establishment impossible, additional reseedings may be optional if erosion from construction activities is moderate or low and total vegetative cover (of native and non-native species together) exceeds 30%.

5. 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 Office of Energy to agree to amendments to this plan. The Office of Energy 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 Office.

References

Natural Resources Conservation Service (NRCS). 1994. Umatilla County area, Oregon: hydric soils list (Draft copy). USDA Natural Resources Conservation Service, Pendleton, Oregon. 22 pp.

Natural Resources Conservation Service (NRCS). 1988. Soil survey of Umatilla County area, Oregon. USDA Natural Resources Conservation Service, Pendleton, Oregon. 388 pp.

Attachment F: Habitat Mitigation Plan

Stateline Wind Project: Stateline 3 Habitat Mitigation Plan
[MARCH 27, 2009]

I. Introduction

This plan describes methods and standards for preservation and enhancement of an area of land near Stateline 3 to mitigate for the impacts of the facility on wildlife habitat.[1] This plan addresses mitigation for both the permanent impacts of facility components and the temporal impacts of facility construction. The certificate holder shall protect and enhance the Stateline 3 mitigation area as described in this plan. This plan specifies habitat enhancement actions and monitoring procedures to evaluate the success of those actions. This plan does not address additional mitigation that might be required under the Wildlife Monitoring and Mitigation Plan for the Stateline Wind Project. This plan has been developed in consultation with the Oregon Department of Fish and Wildlife (ODFW).

II. Description of the Impacts Addressed by the Plan

The Stateline 3 footprint (area covered by permanent facility components) may occupy areas of Category 3 and 4 grassland-steppe vegetation, Category 3 Conservation Reserve Program (CRP) or revegetated grassland and Category 3 grassland-shrub-steppe vegetation.[2] Most of the footprint would occupy Category 6 habitat (dryland agriculture). In compliance with a site certificate condition, the certificate holder would avoid any permanent or temporary impact on Category 1 and Category 2 habitat.

In addition to the areas permanently affected by the Stateline 3 footprint, construction would temporarily affect areas of Category 3, 4, 5 and 6 habitats. Temporarily affected Category 3, 4 and 5 non-cropland habitats include CRP, grassland, grassland-shrub-steppe and shrub-steppe. After disturbance, the recovery of temporarily disturbed Category 3 and 4 grassland areas to a mature stage might take two to four years; recovery of mature native shrubs in the Category 3, 4 and 5 shrub-steppe vegetation might take ten to 30 years to reach the maximum height and vertical branching present before construction. During the period needed to achieve full recovery of these habitat subtypes, habitat quality is temporarily degraded until recovery is successful (temporal impact). The duration of this impact on wildlife is variable, depending on the wildlife species' needs.

III. Calculation of the Size of the Mitigation Area

The Stateline 3 habitat mitigation area (HMA) must be large enough to achieve, within a reasonable time, the habitat mitigation goals and standards of ODFW's Fish and Wildlife Habitat Mitigation Policy described in OAR 635-415-0025. For Category 2 impacts, ODFW goals require mitigation to achieve both "no net loss" and a "net benefit" in habitat quantity or quality. The ODFW goals require mitigation to achieve "no net loss" of habitat in Categories 3 and 4 (acre-for-acre mitigation). For Category 5 impacts, mitigation is achieved by a "net benefit in

[1] This plan for Stateline 3 is incorporated by reference in the site certificate for the Stateline Wind Project 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. Habitat mitigation for Stateline 1&2 is addressed in the separate Stateline Wind Project Revegetation Plan.

[2] Habitat is designated according to the Oregon Department of Fish and Wildlife categories (OAR 635-415-0025).

habitat quantity or quality." For Category 6, mitigation is achieved by actions that minimize direct habitat loss and avoid impacts to off-site habitat.

The actual Stateline 3 footprint and construction disturbance areas cannot be determined until the final design layout of the facility is known. Before beginning construction of the Stateline 3, the certificate holders must provide to the Oregon Department of Energy (Department) and ODFW a map showing the final design configuration of Stateline 3 and a table showing the acres of permanent impacts and construction area impacts on habitat (by category, habitat types and habitat subtypes). Before beginning construction, the certificate holder shall calculate the mitigation area requirement, as illustrated below, based on the final design configuration of Stateline 3 and subject to the approval of the Department.

For the footprint impacts, the HMA must include at least one acre for every acre of footprint impacts to Category 3 and Category 4 habitat (a 1:1 ratio) to achieve "no net loss." No permanent impact to Category 5 habitat is anticipated.

To address the temporal loss of habitat quality during the recovery of Category 3 and Category 5 shrub-steppe (SS) and grassland shrub-steppe (GSS) habitat temporarily disturbed during construction of Stateline 3 (outside the footprint), the HMA must include ½ acre for every acre of shrub-steppe habitat affected (a 0.5:1 ratio). If the revegetation success criteria are not met in the affected areas of temporarily disturbed SS habitat, as determined under the *Revegetation Plan*, then the Council may require the certificate holder to provide additional mitigation.

Based on maximum habitat impact estimates, Stateline 3 would have the following footprint and temporal impacts:[3]

Habitat Category	**Footprint Impact** (acres)	**Temporal Impact on SS and GSS Habitat** (acres)
Category 3	8.91	3.97
Category 4	0	n/a
Category 5	0	0.86
Category 6	49.94	n/a
Total acres	58.85	3.46

To illustrate the calculation of the mitigation area requirement, the area of impact within each affected habitat category, and the corresponding mitigation area requirements, sample calculations are shown below, based on the maximum habitat impact estimates in the table above:

Category 3
Footprint impacts: 8.91 acres (1:1 ratio)
Temporal impacts SS and GSS: 3.97 acres
Mitigation area requirement: 8.91 acres + (3.97 acres x 0.5) = 10.9 acres

[3] Maximum habitat impact estimates are the estimated maximum impacts of the new Stateline 3 components on high-value wildlife habitat as shown in Table 8 of the Proposed Order on the Amendment #4.

Category 5
Temporal impacts to SS: 0.86 acres
Mitigation area requirement: 0.86 acres x 0.50 = 0.43 acres

Total mitigation area requirement (rounded to nearest whole acre): 11 acres

Within four months after beginning construction, the certificate holder shall determine the final size and configuration of the HMA in consultation with ODFW and the affected landowner and subject to the approval of the Department. In the Request for Amendment #4, the applicants proposed to increase the size of the HMA to 50 acres on a voluntary basis, although the calculated mitigation requirement may be less. Within four months after beginning construction of Stateline 3, the certificate holder shall acquire the legal right to create, maintain and protect the HMA for the life of the facility by means of an outright purchase, conservation easement or similar conveyance and shall provide a copy of the documentation to the Department.[4]

IV. Description of the Mitigation Area

The ODFW standards require mitigation for Category 3 impacts to be "in proximity" to the Stateline 3, and the HMA must be located where habitat protection and enhancement are feasible consistent with this plan.[5] The applicant identified two 50-acre parcels in proximity to the Stateline 3. Each parcel contains sufficient areas of habitat in the quantity and quality necessary to meet the mitigation requirements discussed above. Both parcels are acceptable to ODFW for the purposes of the HMA. The parcels are described further in the Final Order on Amendment #4.

V. Habitat Enhancement Actions

The certificate holder shall implement the habitat enhancement actions described in this plan. The objectives of the plan are to protect the habitat within the HMA for the life of the facility and to enhance the baseline condition of the habitat to meet the ODFW mitigation goals.

The certificate holder shall protect the habitat within the HMA for the life of the facility and shall implement the enhancement actions. The certificate holder shall, without unreasonable delay, begin the enhancement actions described in this section after the final configuration of Stateline 3 is known and the size and boundaries of the HMA have been determined and approved by the Department. The certificate holder shall begin the enhancement actions no later than the start of Stateline 3 operations. Specific enhancement actions are described below.

1. Modification of Livestock Grazing. The certificate holder shall restrict grazing within the HMA. Removing livestock from the mitigation area during most of the year will enable recovery of native bunchgrass and sagebrush in areas where past grazing has occurred, resulting in better vegetative structure and complexity for wildlife. Reduced

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

[5] OAR 635-415-0005 defines "in-proximity habitat mitigation" as follows: "habitat mitigation measures undertaken within or in proximity to areas affected by a development action. For the purposes of this policy, 'in proximity to' means within the same home range, or watershed (depending on the species or population being considered) whichever will have the highest likelihood of benefiting fish and wildlife populations directly affected by the development."

livestock grazing may be used as a vegetation management tool, limited to the period from approximately November 15 through March 1, depending on annual precipitation, soil moisture and the level of stocking (livestock animals on site).

2. Weed Control and Area Seeding. The certificate holders shall implement a noxious weed control program. Under the weed control program, the certificate holder shall monitor the mitigation area to locate weed infestations. The certificate holder shall continue weed control monitoring, as needed, for the life of the facility. As needed, the certificate holder shall use appropriate methods to control weeds. Weed control on the mitigation site will reduce the spread of noxious weeds within the habitat mitigation area and on any nearby native grassland, CRP or cultivated agricultural land. Weed control will promote the growth of desirable native vegetation in areas where weeds are competing with desirable native forbs and grasses. Where substantial areas of soil (greater than 100 ft^2) are left bare from weed control activities, the certificate holders shall hand-seed the area in the appropriate time of year with a mixture containing native grass and shrub seeds. The certificate holders may consider weeds to be successfully controlled when weed clusters have been eradicated or reduced to a non-competing level. Weeds may be controlled with herbicides (spot-spraying or area spaying as appropriate) or hand-pulling. The certificate holders shall notify the landowner of the specific chemicals to be used on the site and when spraying will occur.

3. Fire Control. The certificate holders shall implement a fire control plan for wildfire suppression within the HMA. The certificate holders shall provide a copy of the fire control plan to the Department before starting habitat enhancement actions. The certificate holder shall include in the plan appropriate fire prevention measures, methods to detect fires that occur and a protocol for fire response and suppression. The certificate holders shall maintain fire control for the life of the facility. If wildfire damages any part of the HMA during the life of the facility, the certificate holder shall assess the extent of the damage and implement appropriate actions to restore habitat quality in the damaged area.

4. Habitat Protection. For the life of the facility, the certificate holder shall restrict uses of the HMA that are inconsistent with achieving the habitat mitigation goals.

VI. Monitoring

1. Monitoring Procedures

The certificate holder shall hire a qualified investigator (an independent botanist, wildlife biologist or revegetation specialist) to conduct a comprehensive monitoring program for the Stateline 3 HMA. The purpose of monitoring is to evaluate the protection of habitat quality, the results of enhancement actions and the use of the area by avian and mammal species, especially during the wildlife breeding season. The investigator shall conduct HMA monitoring beginning in the first year after enhancement actions begin and continuing for the life of the facility. The investigator shall visit the site as necessary to carry out the following monitoring procedures:

1) Annually assess the general quality of vegetation cover (species, structural stage, etc).

2) Annually assess progress toward meeting the success criteria described in Section VI.3 below.

3) Annually record environmental factors (such as precipitation at the time of surveys and precipitation levels for the year).

4) Annually record any wildfire that occurs within the HMA and any remedial actions taken to restore habitat quality in the damaged area.

5) Annually assess the success of the weed control (including area seeding) and erosion control programs and recommend remedial action, if needed.

6) Assess the recovery of native bunchgrass and forbs resulting from reduction of livestock grazing pressure by comparing the quality of bunchgrass cover at the time of each monitoring visit with the quality observed in previous monitoring visits and as observed when the HMA was first established (the anticipated baseline year is 2009). The investigator shall establish photo plots of naturally recovering native bunchgrass and forbs during the first year following the beginning of enhancement actions. The investigator shall take comparison photos in the first year and every two years thereafter until desirable vegetation has achieved mature stature. The investigator shall determine the extent of successful recovery of native bunchgrass based on measurable indicators (such as signs of more abundant seed production) and shall report on the progress of recovery within in the monitoring plots.

7) Between April 21 and May 21 beginning in the first spring season after the beginning of construction of the Stateline 3, conduct an area search survey of avian species following appropriate biological protocols. An "area search" consists of recording all birds seen or heard in specific areas (for example, square or circular plots that are 5 to 10 acres in size representative of the HMA habitat). Area searches will be conducted by experienced biologists during morning hours on days with low or no wind. The investigator shall determine the number searches and the number of search areas in consultation with ODFW. The investigator shall repeat the area search survey every five years during the life of the facility.

8) Beginning in the first year after the beginning of construction of Stateline 3 and repeating every five years during the life of the facility, the investigator shall record observations of special status plant and wildlife species (federal or State threatened or endangered species and State Sensitive species) in the HMA during appropriate seasons for detection of these species. Special status species include, but are not limited to, Washington ground squirrel, grasshopper sparrow and burrowing owl.

2. Reporting

The certificate holder shall report the investigator's findings and recommendations regarding the monitoring of the mitigation area to the Department and to ODFW on an annual basis. The certificate holder shall describe all habitat mitigation actions carried out during the reporting year and all additional work performed based on recommendations of the qualified investigator. The report shall include an evaluation of mitigation success, based on the success criteria described below, and a description of the methods used to perform the evaluation. The report to the Department may be included as part of the annual report on the Stateline Wind Project.

3. Success Criteria

Mitigation of the permanent and temporal habitat impacts of Stateline 3 may be considered successful if the certificate holder protects and enhances sufficient habitat within the mitigation area to meet the ODFW goals described above in Section III. The certificate holders must protect the quantity and quality of habitat necessary to meet the goals within the HMA for the life of the facility. The mitigation goals are successfully achieved when the HMA contains, at a minimum, a sufficient quantity of habitat in each category to meet the mitigation area requirements calculated under Section III. The certificate holder may count habitat of higher quality (Category 1 and 2 native grassland) toward meeting the acreage requirements for lower quality habitat. The certificate holder shall determine the actual mitigation area requirements, subject to Department approval, before beginning construction of Stateline 3. If the land selected for the mitigation area does not already contain sufficient habitat in each category to meet these requirements, then the certificate holder must demonstrate improvement of habitat quality as necessary to meet the requirements.

The certificate holder may demonstrate enhancement of habitat quality based on indicators such as: (1) increased vegetative cover compared to the pre-enhancement grazing period, (2) increased avian use by a diversity of species typical for the habitat type and quality of the location (3) more abundant seed production of desirable native bunchgrass, (4) natural recruitment of native forbs and (5) successful noxious weed control.

If the certificate holder cannot demonstrate that the HMA is trending toward meeting the success criteria within three years after the date construction of Stateline 3 begins, the certificate holder shall propose remedial action. The Department may require supplemental native grass planting or other corrective measures, which may include increasing the size of the HMA.

VII. Amendment of the Plan

This Stateline 3 Habitat Mitigation Plan may be amended from time to time by agreement of the certificate holder and the Oregon Energy Facility Siting Council ("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 G: Wildlife Monitoring and Mitigation Plan

Stateline Wind Project: Wildlife Monitoring and Mitigation Plan

[REVISED JANUARY 19, 2017]

This plan describes wildlife monitoring the certificate holders shall conduct during operation[1] of the Stateline Wind Project (SWP) facility in Oregon. 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. This plan addresses the facility as permitted under the Oregon site certificate, as amended and includes updated information for the future years of the raptor artificial nest structures (ANS) requirement as of November 30, 2016.

The SWP facility[2] consists of two parts:

- Stateline 1&2: 186 Vestas V47-660-kilowatt (kW) wind turbines, six permanent meteorological (met) towers, access roads and other related or supporting facilities.[3]
- Stateline 3: Up to 67 GE 1.5-MW wind turbines or up to 43 Siemens 2.3-MW wind turbines, access roads, a 230-kV transmission line, a substation, an operations and maintenance building and other related or supporting facilities.

Wildlife monitoring is necessary to determine whether operation of the facility results in a net loss of habitat quality. For raptors, this will require that the certificate holders obtain a reasonable estimate of the effect of the project on raptors in the context of local raptor populations.

The certificate holders shall use properly trained personnel to conduct this monitoring, subject to approval by the Oregon Department of Energy (Department) as to professional qualifications. For all monitoring except FPL's Wildlife Response and Reporting System (described below), the certificate holders shall hire independent third party investigators (not employees of the certificate holder) to perform monitoring tasks.

The Wildlife Monitoring and Mitigation Plan for the SWP includes the following components:

1) Fatality monitoring program involving:
    a) Removal trials
    b) Searcher efficiency trials
    c) Fatality search protocol
    d) Statistical analysis
2) Established monitoring transect searches

[1] This plan does not address pre-construction wildlife surveys that FPL Energy carried out in support of its application for a site certificate for the Stateline project.
[2] As used herein, "SWP facility" includes Stateline 1, 2 and 3.
[3] The Final Order on the Application authorized construction of 127 Stateline 1 turbines. However, only 126 were actually built. The Final Order described the four Stateline 1 permanent met towers as "guyed masts set in concrete foundations" (Final Order page 12). However, the certificate holder has built unguyed, concrete met towers for both Stateline 1 and 2. Nevertheless, if any permanent guyed met towers are used in the future, the certificate holder shall comply with the provisions in this plan that address guyed met towers.

3) Raptor nesting surveys

4) Burrowing owl surveys

5) Avian use surveys

6) FPL's "Stateline Wind Project Wildlife Response and Reporting System"

Following is a discussion of the components of the monitoring plan, statistical analysis methods for fatality data and data reporting.

1. Definitions and Methods

Seasons

This plan uses the following dates for defining seasons:

Season	Dates
Spring Migration	March 16 to May 15
Summer/Breeding	May 16 to August 15
Fall Migration	August 16 to October 31
Winter	November 1 to March 15

Search Plot Selection

Stateline 1&2

Certificate holder FPL Energy Vansycle LLC (FPL Vansycle) is responsible for implementing this plan as it applies to Stateline 1&2. The certificate holder shall conduct standardized carcass searches within search plots. The certificate holder, in consultation with the Oregon Department of Fish and Wildlife (ODFW), shall select search plots based on a systematic sampling design (in general, every other plot is sampled in a monitoring year). Turbine strings will be broken into rectangular search plots that contain two to four turbines each. The edge of plots will be no closer than 63 meters from the nearest turbine or, if guyed meteorological (met) towers are used, no closer than 63 meters from the nearest guyed met tower. The certificate holder shall provide maps of the search plots to the Department of Energy before beginning fatality monitoring at the facility. The certificate holder shall use the same search plots for each search conducted during a monitoring year.

Stateline 3

Certificate holder FPL Energy Stateline II, Inc. (FPL Stateline) is responsible for implementing this plan as it applies to Stateline 3. The certificate holder shall conduct standardized carcass searches within search plots. The certificate holder, in consultation with ODFW, shall select search plots based on a systematic sampling design. Each search plot will contain one turbine. Search plots will be square or 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. Square search plots will be of sufficient size to contain a circular search plot as described above. 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.

Scheduling and Sampling Frequency

Certificate holder FPL Vansycle began standardized fatality monitoring in Oregon upon the beginning of operation of the facility. For Stateline 1, the first "monitoring year" commenced January 1, 2002. For Stateline 2, the first monitoring year commenced January 1, 2003. FPL Vansycle completed standardized fatality monitoring for Stateline 1&2 in 2006. For Stateline 3, the first monitoring year will commence in the first calendar month following completion of construction.

Within each monitoring year for Stateline 1 and 2, FPL Vansycle conducted standardized carcass searches at the rates of frequency shown below. Over the course of each monitoring year, FPL Vansycle conducted 16 searches. The total number of searches per season is based on applying the rate to the number of months in the season (as defined above).

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

For Stateline 3, the certificate holder shall conduct one full year of fatality monitoring (16 searches), beginning in the first calendar month following completion of construction.

Sample Size for Standardized Carcass Searches

For the standardized carcass searches described below, the sample size is the number of turbines searched per monitoring year. Because the number of turbines per search plot varies (as described above), the number of search plots will be less than the sample size (total number of turbines searched per year).

The determination of the sample size is based primarily on the expected precision in the fatality estimates for all Stateline wind turbines in Oregon and Washington.

Stateline 1 sample size: FPL Vansycle searched 64 Stateline 1 turbines during the first monitoring year (plus 60 turbines in Washington) and 63 Stateline 1 during the second monitoring year (plus 60 turbines in Washington). Over the first two monitoring years, all 126 Stateline 1 turbines were searched for at least 12 months. Stateline 1 does not include any guyed met towers.

Stateline 2 sample size: FPL Vansycle searched 30 Stateline 2 turbines in 2003 and 16 Stateline 2 turbines in 2006 (plus 23 turbines in Washington). Stateline 2 does not include any guyed met towers .

Stateline 3 sample size: The certificate holder shall search 20 turbines in a single monitoring year. The certificate holder shall select the turbines in consultation with ODFW and the Department. Stateline 3 does not include any guyed met towers.

Duration of Fatality Monitoring

Stateline 1&2: FPL Vansycle completed standardized fatality monitoring for Stateline 1&2 in 2006.

Stateline 3: The certificate holder may terminate the fatality monitoring of Stateline 3 turbines after completing one monitoring year, subject to the approval of the Department.

For Stateline 3, the certificate holder shall use a worst-case analysis to resolve any uncertainty in the results and to determine whether mitigation is required. In lieu of approving the termination of the fatality monitoring program for Stateline 3 after one year, the Department may require additional, targeted monitoring if the data indicate the potential for unexpected impacts of a type that cannot be resolved appropriately by worst-case analysis and appropriate mitigation.

2. Removal Trials

The objective of the removal trials is to estimate the length of time avian and bat carcasses remain in the search area. Carcass removal studies will be conducted during each season in the vicinity of the search plots. Estimates of carcass removal 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.

FPL Vansycle conducted carcass removal trials within each of the seasons defined above for Stateline 1 and 2 during the years in which fatality monitoring was done.[4] This monitoring plan does not require removal trials for Stateline 3. Instead, removal data from Stateline 1 and 2 will be used to adjust carcass counts for removal bias.

3. 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 in the same area in which carcass searches occur in both grassland/shrub-steppe and cultivated agriculture habitat types. FPL Vansycle conducted searcher efficiency trials in each season for Stateline 1 and 2 in those years in which fatality monitoring was done.[5] FPL Stateline will conduct searcher efficiency trials for Stateline 3 in each season of the year in which fatality monitoring is done. Searcher efficiency will be estimated by habitat type and season. Estimates of searcher efficiency will be used to adjust the number of carcasses found, correcting for detection bias.

For Stateline 3, the certificate holder shall conduct ten searcher efficiency trials: two in the spring season, three in summer, two in fall and three in winter. Each season, approximately 10 carcasses of birds of two size classes (20 total carcasses) will be distributed in each of two habitat types (grassland/shrub-steppe and cultivated agriculture).[6] In each trial in the spring and fall, at least five carcasses from each size class (10 total carcasses) will be placed in each of the two habitat types. In each trial in the summer and winter, at least three carcasses from each size class (6 total carcasses) will be placed in each of the two habitat types.

[4] Except that removal trials were not required in 2006 for Stateline 2.
[5] Except that searcher efficiency trials were not required in 2006 for Stateline 2.
[6] This means that approximately 160 trial carcasses would be used in searcher efficiency trials during one monitoring year.

Personnel conducting searches will not know when trials are conducted; nor will they know the location of the trial carcasses. 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.

On the day of a standardized carcass search (described below) but before the beginning of the search, efficiency trial carcasses will be placed at random locations 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 left shoulder), 2) hidden to simulate a crippled bird, and 3) partially hidden. Each carcass will be discreetly secured at its location to discourage removal by scavengers.

Each non-domestic carcass will be discreetly marked so that it can be identified as an efficiency trial carcass after it is found. 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.

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

4. Standardized Carcass Searches

The objective of the standardized carcass searches ("fatality monitoring") is to estimate the number of bird and bat fatalities that are attributable to facility operation. The goal of bird and bat fatality monitoring is to obtain a precise estimate of the fatality rate and associated variances.

After completing a full year of fatality monitoring for Stateline 3, the certificate holder shall report an estimate of fatalities in six categories: (1) all birds, (2) small birds, (3) large birds, (4) raptors, (5) bats, (6) grassland birds, (7) nocturnal migrants, and (8) State and federally listed threatened and endangered species and State Sensitive Species listed under OAR 635-100-0040. In addition, the certificate holder shall report fatalities of Washington ground squirrels, if any, observed during the carcass searches and shall record and document detections of Washington ground squirrels (scat, holes and live detections).

The certificate holder 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 whose death appears related to facility operation. 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. The total number of avian and bat carcasses will be estimated by adjusting for removal and searcher efficiency bias. If the cause of death is not apparent, the mortality will be attributed to facility operation.

FPL Vansycle conducted two years of fatality monitoring for the Stateline 1 area and two years of fatality monitoring for the Stateline 2 area. For Stateline 3, FPL Stateline shall conduct one full year of fatality monitoring. If analysis of the fatality data indicates that a significant

impact on wildlife and wildlife habitat has occurred, the certificate holder shall implement appropriate mitigation, subject to the approval of the Department. Mitigation is discussed in Section 12 below.

Personnel trained in proper search techniques ("the searchers") will conduct the carcass searches by walking parallel transects. The searchers will search rectangular search plots with the long axis of the plot centered on the turbine string. All area within a minimum of 63 meters from turbines or permanent guyed met towers will be searched. Transects will be initially set at 6 meters apart in the area to be searched. 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. It should take approximately 45 to 90 minutes to search each turbine (each search plot contains multiple turbines), depending on the habitat type.

The searchers will record the condition of each carcass found, using the following condition categories:

- Intact – a carcass that is completely intact, is not badly decomposed and shows no sign of being fed upon by a predator or scavenger
- Scavenged – an entire carcass that shows signs of being fed upon by a predator or scavenger, or portions of a carcass in one location (e.g., wings, skeletal remains, legs, pieces of skin, etc.)
- Feather Spot – 10 or more feathers at one location indicating predation or scavenging

All carcasses (avian and bat) found during the standardized carcass searches will be photographed, recorded and labeled with a unique number. 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 or protected species with the ODFW. The certificate holder shall coordinate collection of federal endangered, threatened or protected species with the U.S. Fish and Wildlife Service (USFWS). The certificate holder shall obtain appropriate collection permits from ODFW and USFWS.

The searchers might discover carcasses incidental to formal carcass searches (e.g., while driving within the project area). If the incidentally discovered carcasses are found at turbines that are not part of the formal search sample, the searchers will identify, photograph and collect the carcasses as is done for carcasses within the formal search sample during scheduled searches. If the incidentally discovered carcasses are within the formal search plots, the searchers will leave the carcasses undisturbed, unless the carcass is a state or federally threatened or endangered species. The certificate holder shall coordinate collection of state endangered, threatened or protected species with ODFW. The certificate holder shall coordinate collection of federal endangered, threatened or protected species with the USFWS. The searchers will record the location of all incidentally discovered carcasses or injured birds on a detailed map of the study

area showing the location of wind turbines and associated facilities such as power lines and met towers. Any injured native birds found will be carefully captured by a trained Project Biologist or technician and transported to Blue Mountain Wildlife Center in Pendleton in a timely fashion. The certificate holder shall follow a protocol for handling injured birds that has been developed with Lynn Thompkins of Blue Mountain Wildlife.

5. Established Monitoring Transect Surveys

Surveys of grassland transects were conducted for Stateline 1 only. The objective of surveys of established monitoring transects is to determine whether the operation of the facility results in a loss of habitat quality. A reduction in use by grassland/steppe avian species near the facility would indicate a loss of habitat quality.

Stateline 1 transects: FPL Vansycle established 20 transects perpendicular to the turbine strings in non-agricultural grassland steppe and CRP habitats.[7] The survey protocol for Stateline 1 was described in earlier versions of this plan.[8]

Stateline 2 transects: No additional transects could be established because the turbine strings were located in cultivated land.

Stateline 3 transects: No additional transects could be established because of insufficient suitable grassland and inability to conduct surveys in the available time before the anticipated start of construction.

6. Raptor Nest Surveys

The objectives of raptor nest surveys are to estimate the size of the local breeding populations of tree-nesting raptor species in the vicinity of the facility and to determine whether operation of the facility results in a reduction of nesting activity or nesting success in the local populations of "target raptor species": Swainson's hawk and ferruginous hawk. Certificate holder FPL Vansycle is responsible for implementing this plan as it applies to Stateline 1&2. Certificate holder FPL Stateline is responsible for implementing this plan as it applies to Stateline 3.

Aerial and ground surveys will be used to gather nest success statistics on active nests, nests with young and young fledged. The certificate holder will share the data with state and federal biologists.

During each survey year, the certificate holder shall conduct at least one helicopter survey and additional surveys as described in this section. All nests will be given identification numbers, and 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 also be recorded as they may become occupied during future years. All new nests not previously mapped, whether active or inactive, will be given an identification number and their locations (coordinates) will be recorded. Ground surveys are subject to access.

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[7] The original Oregon Wildlife Monitoring Plan (9/14/01) required the certificate holder to survey 24 transects that had been established before construction of Stateline 1. However, due to changes in project layout between the initial monitoring plan and the final layout as shown in the site certificate and changes in habitat due to landowner uses, the number of suitable transects for this survey was reduced to 20.

[8] See the Oregon Wildlife Monitoring Plan (Revised January 20, 2006).

For Stateline 1, FPL Vansycle conducted aerial surveys between May 5 and 17, 2002, and between June 8 and 28, 2002. Surveys were conducted within a 5-mile buffer of the Stateline 1 turbines. In addition, active ferruginous hawk and Swainson's hawk nests within two miles of Stateline 1 turbines were surveyed from the ground to determine nesting success.

In 2003, FPL Vansycle conducted an aerial survey within a 2-mile buffer of Stateline 1 and 2 turbines to determine nest occupancy. In addition, FPL Vansycle conducted ground surveys to determine species, number of young and nesting success. "Nesting success" means that the young have successfully fledged (the young are independent of the core nest site). In the ground survey, FPL Vansycle targeted Swainson's hawk and ferruginous hawk nests and any nests of the target raptor species not observed during the aerial survey.

In 2006, FPL Vansycle conducted an aerial survey to determine nest occupancy and a ground survey to determine species, number of young and nesting success. The survey area was the area within a 2-mile buffer around Stateline 2 turbines. In the ground survey, FPL Vansycle targeted Swainson's hawk and ferruginous hawk nests and any nests of the target raptor species not observed during the aerial survey.

For Stateline 3, FPL Stateline shall conduct an aerial survey within a 1-mile buffer of Stateline 3 turbines to determine nest occupancy by Swainson's hawks and ferruginous hawks. In addition, one known ferruginous hawk nest located more than one mile from Stateline 3 turbines will be surveyed. The certificate holder shall conduct a minimum of one ground survey of Swainson's and ferruginous hawk nests to determine number of young and nesting success.

Given the very low buteo 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.

If analysis of the raptor nesting data indicates any reduction in nesting success by the target raptor species within the survey areas, the certificate holder shall implement appropriate mitigation, subject to the approval of the Department. At a minimum, if the surveys reveal that a target raptor species has abandoned a nest or territory within ½ mile of the facility, or has not fledged any young over any two survey years, the certificate holder shall assume the abandonment or unsuccessful fledging is the result of the project unless another cause can be demonstrated conclusively. Based on that assumption, the certificate holder shall implement appropriate mitigation. In addition, if the data indicate clear evidence of displacement or disturbance of target raptor nesting species between beyond ½ mile from the facility, the certificate holder shall implement appropriate mitigation.

For ferruginous hawks, appropriate mitigation may include creation, maintenance and monitoring of nesting platforms; specifically, eight nesting platforms would be created a minimum of 2 miles away from turbines for every ferruginous hawk nest assumed or shown to be affected.

Due to the difficulty in replacing nesting habitat for Swainson's hawks, appropriate mitigation may include determining the status of the tree structures currently supporting Swainson's hawks within three miles of the turbines and, with landowner approval, implementing protection measures to retain those structures and to protect existing nest trees.

This may include fencing to protect existing trees or spraying black locust trees for insect infestation. It may be appropriate to recruit native tree species.

7. Burrowing Owl Surveys

The objectives of owl surveys are to estimate the size of the local breeding population of burrowing owls in the vicinity of the facility and to determine whether operation of the facility results in a reduction of nesting activity or nesting success in the local burrowing owl population.

Given the expected small sample size of active burrowing owl nests within 1,000 feet of the facility, 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. No burrowing owls were observed within 1,000 feet of the proposed Stateline 1 turbines during the 2001 spring pre-construction surveys. Therefore, there is no ability to make any statistical or descriptive inferences on burrowing owl displacement or disturbance impacts to burrowing owls in Oregon.

For Stateline 1 and 2 facilities, FPL Vansycle conducted burrowing owl surveys during the breeding season within suitable grassland habitat in association with the fatality monitoring described above in Section 4. For each monitoring year, FPL Vansycle conducted a minimum of two surveys for burrowing owls to obtain estimates of burrowing owl nest density near the turbines. For these surveys, FPL Vansycle followed a protocol developed in consultation with ODFW. Taped burrowing owl vocalizations were played to enhance the ability to detect burrowing owls. Two historic nest sites within the Oregon project area were checked for use. The burrow and an adjacent 100 meters were surveyed for sign of activity and alternate nest sites. During the burrowing owl surveys, observers recorded and documented detections of Washington ground squirrels (scat, holes and live detections).

For Stateline 3 facilities, FPL Stateline shall conduct a burrowing owl survey in 2010 for known active or historic burrowing owl nests and any newly discovered nests within 1,000 feet of the Stateline 3 wind turbines. In addition to checking all known historic burrowing owl sites, the certificate holder will search a buffer of 1,000 feet around each site to look for auxiliary burrows, new burrows or other signs of activity. Two burrowing owl nests were found within the project boundary during pre-construction in 2008 and will be checked for activity during the construction monitoring in 2009.

8. Avian Use Surveys

During each standardized carcass search, as described in Section 4 above, observers will record birds detected in a ten-minute period at approximately one-third of the turbines within the carcass search plots (e.g., one point count station per carcass search plot which may consist of two to four turbines) using standard variable circular plot point count survey methods. Additional observations of species of concern (State and federally listed threatened and endangered species and State Sensitive Species listed under OAR 635-100-0040) will be recorded if observed during the carcass searches, but collecting this information is secondary to the actual searching for carcasses so the searchers are not distracted from their main task of finding carcasses.

For Stateline 3, while on site during carcass searches (including during travel between search plots), observers shall record observations of special status birds and mammals within the facility site. Observers shall record observations of birds perching on aboveground transmission line

conductors and support structures in the vicinity of the turbines being searched. Observers shall report any fatalities observed below or near transmission lines.

9. FPL's Stateline Wind Project Wildlife Response and Reporting System

FPL's "Stateline Wind Project Wildlife Response and Reporting System" is a monitoring program set up for searching for and handling avian and bat casualties found by maintenance personnel. A description of this system and associated data forms used for the Vansycle Ridge Wind Project are found in FPL's application for a site certificate (Attachment P-6, Appendices B and C).

Construction and maintenance personnel will be trained in the methods. This monitoring program includes both reporting of carcasses discovered incidental to construction and maintenance operations ("incidental finds") and reporting of carcasses discovered under a standardized search protocol for an area within approximately 50 meters of the turbines, measured from the base of the tower ("protocol searches").

For Stateline 1, a sample of approximately 45 turbines not included in the standardized carcass searches was chosen to be included in protocol searches in each Stateline 1 monitoring year. FPL Vansycle selected this sample from the overall Stateline Wind Project in Oregon and Washington, with at least 13 of the sampled turbines located in Oregon.

For Stateline 2, FPL Vansycle selected a sample of seven Stateline 2 turbines not included in the standardized carcass searches to include in protocol searches in each Stateline 2 monitoring year.

For Stateline 3, FPL Stateline shall select a sample of approximately 15 percent of the Stateline 3 turbines that are not included in the standardized carcass searches.

All carcasses discovered by maintenance personnel will be photographed and recorded. If maintenance personnel find carcasses within the search plots for protocol searches, they will notify a project biologist who will collect the carcasses. If maintenance personnel discover incidental finds at turbines that are not within search plots for the standardized carcass searches described in Section 4, they will notify a project biologist who will collect the carcasses. If maintenance personnel discover carcasses within search plots for the standardized carcass searches described in Section 4, they will leave the carcasses undisturbed, unless the carcass is a state or federally threatened or endangered or otherwise protected species. The certificate holder shall coordinate collection of state endangered, threatened or protected species with ODFW. The certificate holder shall coordinate collection of federal endangered, threatened or protected species with the USFWS.

10. Statistical Analysis Methods for Fatality Data

The certificate holder shall calculate fatality rates using the statistical methods described below, except that the certificate holder may use different notation and methods that are mathematically equivalent with prior approval of the Department.

(1) Observed number of carcasses found during standardized carcass searches for which the cause of death is either unknown or is attributed to the facility.

(2) Searcher efficiency expressed as the proportion of planted carcasses found by searchers

(3) Non-removal rates expressed as the length of time a carcass is expected to remain in the study area and be available for detection by the searchers

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 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 interval between searches in days

$\hat{\pi}_i$ the estimated probability that a carcass is both available to be found during a search and is found (i = 1 and 2; two estimators)

m_i the estimated annual average number of fatalities per turbine per year, adjusted for removal and observer detection bias (i = 1 and 2; two estimators)

Observed Number of Carcasses

The estimated average number of carcasses ($\bar{c}$) observed per turbine (or guyed met tower) is:

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

The final estimate of $\bar{c}$ and its standard error are to be calculated using bootstrapping (Manly *et al.* 1997[9]). Bootstrapping is a computer simulation technique that is useful for calculating point estimates, variances and confidence intervals for complicated test statistics. The

[9] Manly, B.F.J., *Randomization, Bootstrap and Monte Carlo Methods in Biology* (2nd edition), Chapman and Hall, New York (1997).

certificate holder shall calculate the mean of at least 5000 bootstrap estimates. The standard deviation of the bootstrap estimates of $\bar{c}$ is the estimated standard error of $\bar{c}$ (that is, $se(\bar{c})$).

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:

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

This estimator is the maximum likelihood estimator assuming that the removal times follow an exponential distribution and that 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.

The certificate holder shall use bootstrapping to calculate the final estimate of $\bar{t}$, the estimated standard error and 90% confidence limits. At least 5000 bootstrap iterations will be used. The standard deviation of the bootstrap estimates of $\bar{t}$ is the estimated standard error of $\bar{t}$ (that is, $se(\bar{t})$). Removal rates will be estimated by major habitat, carcass size (large and small) and season.

Estimation of Searcher Efficiency

Searcher efficiency rates (that is, the rate of observer detection) are expressed as p, the proportion of trial carcasses that are detected by searchers. The standard error (square of variance of mean) and 90% confidence limits will be calculated by bootstrapping. At least 5000 bootstrap iterations will be used. Observer detection rates will be estimated by major habitat, carcass size and season.

Estimation of Total Number of Facility-Related Fatalities

The certificate holder shall provide two estimators for the mean number of fatalities per turbine per year. Both estimators adjust the observed number of fatalities by dividing the number of observed carcasses by an estimate of the probability that a carcass is available to be picked up during a fatality search (i.e., the probability the carcass is not removed by a scavenger) and is observed (the probability of detection).

The first estimator of total number of annual facility-related fatalities (m_1) is calculated by:

$$m_1 = \frac{\bar{c}}{\hat{\pi}_1}$$

where

$$\hat{\pi}_1 = \begin{cases} \dfrac{\bar{t} * p}{I} & \text{if } I > \bar{t} \\ p & \text{if } I \le \bar{t} \end{cases}$$

This first estimator appears to provide an underestimate of true mortality when the interval between searches is similar to the mean carcass removal time. For this reason, the certificate holder shall calculate the mean number of fatalities per turbine per year using a second estimator, as follows:

$m_2 = \frac{\bar{c}}{\hat{\pi}_2}$ where $\hat{\pi}_2$ includes adjustments for both observer detection and scavenging bias and assuming that the carcass removal times t_i follow an exponential distribution.

This second estimator does not underestimate true mortality when the mean removal time is similar to or larger than the interval between searches. This estimator will be used when comparisons are made to determine if mitigation should be implemented as described in Section 12.

For Stateline 3, the certificate holder shall calculate and report fatality rates (per turbine and per megawatt) for each of eight categories: (1) all birds, (2) small birds, (3) large birds, (4) raptors, (5) bats, (6) grassland birds, (7) nocturnal migrants, and (8) State and federally listed threatened and endangered species and State Sensitive Species listed under OAR 635-100-0040.[10] The certificate holder shall calculate the "all birds" estimate and the "small birds" estimate for all species and, separately, for only those species protected by law. Modifications to these estimates will be made to incorporate the varying search efforts by season (monthly in winter and summer, twice monthly in fall and spring). In addition, the certificate holder shall estimate the number of facility-related fatalities separately for turbines that are located on land that does not support grassland steppe or low shrub/shrub steppe habitat and for turbines that are located on land that does support grassland steppe or low shrub/shrub steppe habitat. Additional modifications may be made, subject to approval by the Department.

The variance of *m* is difficult to estimate due to the products and ratios of random variables in the equation above. The certificate holder may estimate the variance and confidence intervals using the computer intensive technique of bootstrapping (Manly 1997, Barnard 2000).

11. Data Reporting

The certificate holder will report the monitoring data and analysis to the Council. This report may be included in the annual report required under OAR 345-026-0080 or may be submitted as a separate document at the same time the annual report is submitted. In addition, the certificate holder shall provide to the Council any data or record generated in carrying out this monitoring plan upon request by the Council.

The certificate holder shall notify USFWS and ODFW immediately in the event that any federal or state endangered or threatened species are taken.

The public will have an opportunity to receive information about monitoring results and to offer comment. Within 30 days after receiving the final annual report of monitoring results, the Department will give reasonable public notice via the Internet and make the report available

[10] Grassland nesting species include grasshopper sparrow, savannah sparrow, vesper sparrow, short-eared owl, burrowing owl, northern harrier, horned lark, western meadowlark, long-billed curlew, ring-necked pheasant, Hungarian partridge, chukar partridge, California quail and any other resident grassland nesting bird species that is found in the area.

to the public. The notice will specify a time in which the public may submit comments to the Department. The Technical Advisory Committee established under the Walla Walla County conditional use permit may offer comments about the results of monitoring programs in Oregon.

12. Mitigation

The selection of the mitigation actions that the certificate holder may be required to implement under this plan should allow for flexibility in creating appropriate responses to monitoring results that cannot be known in advance. If mitigation is needed, the certificate holder shall propose appropriate mitigation actions to the Department and shall carry out mitigation actions approved by the Department. In addition to mitigation described above, possible mitigation actions include but are not limited to the measures discussed in this section. No later than December 31, 2010, the Department and the certificate holder shall review this plan and assess whether modification of the required mitigation is appropriate.

Grassland Nesting Species

Grassland nesting species include all native bird species that rely on grassland habitat and that are either resident species occurring year round or species that nest in the area, excluding horned lark, burrowing owl and northern harrier. The certificate holder shall determine significant impact to grassland nesting species based on the fatality monitoring program discussed above. For Stateline 1&2, if the average annual fatality rate is greater than 1.25 fatalities per turbine or guyed met tower per year for all species combined or if the average annual fatality rate is greater than 0.5 fatalities per turbine or guyed met tower per year for a single grassland nesting bird species, then the certificate holder shall assume that a significant impact on habitat has occurred and shall implement appropriate mitigation. For Stateline 3, if the average annual fatality rate is greater than the threshold of concern (0.59 fatalities per megawatt) for grassland species as a group, then the certificate holder shall assume that a significant impact on habitat has occurred and shall implement appropriate mitigation.[11] The certificate holder shall include in this estimate any grassland nesting species fatality that is observed, even if it is observed during the non-nesting period. The certificate holder shall include in the estimate all carcasses unidentified as to species and for which there is no evidence to rule out the carcass as one of the grassland species listed above.

If the analysis of turbine fatality data indicates that mitigation for grassland nesting species is required, the certificate holder shall enhance sufficient habitat to support the number of grassland nesting birds affected. For Stateline 3, the number of birds affected includes the number of fatalities above the threshold of concern. The certificate holder shall protect that enhanced habitat for the life of the facility. The certificate holder shall propose the amount of habitat enhancement based on expected densities and habitat requirements of these species as

[11] 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."

described in the literature and studies of the Stateline facility and other wind energy facilities in the Northwest.

For Stateline 3, if the average annual fatality rate for a State Sensitive avian species listed under OAR 635-100-0040 is greater than the threshold of concern (0.2 fatalities per megawatt), the Department may require the certificate holder to implement mitigation for that species.

FPL Vansycle reported the average annual fatality rates for grassland bird species in *Stateline Wind Project Wildlife Monitoring Final Report: July 2001 - December 2003*. This report analyzed two years of monitoring data collected between January 1, 2002, and December 31, 2003. Based on the data, the average annual fatality rate for all grassland bird species as a group was 1.28 fatalities per turbine. The average annual fatality rate for horned larks was 0.89 fatalities per turbine, and no other single grassland species had an annual fatality rate greater than 0.13 fatalities per turbine per year. The reported fatality rates exceeded the "all species" mitigation threshold for Stateline 1&2 of 1.25 fatalities per turbine per year and the "single species" threshold of 0.5 fatalities per turbine per year.

As of January 20, 2006, the Council determined that additional mitigation for facility impacts to grassland species was not required pending analysis of additional data from future monitoring. The basis for this determination was that the reported fatality rates were very close to target levels and the most common species affected was horned lark, a species that is abundant in the area and whose survival is not at risk.

In 2006, FPL Vansycle conducted fatality monitoring for 16 turbines in the Stateline 2 area and reported the results in *Stateline Wind Project Wildlife Monitoring Annual Report: January - December 2006*. The average annual fatality rate for all grassland bird species as a group was 0.45 fatalities per turbine.[12] Single-species fatality rates were not reported.[13] Accordingly, additional mitigation for impacts to grassland species is not warranted as of the date of this plan.

Raptors

For Stateline 1&2, the certificate holder shall determine significant impact to raptors (excluding burrowing owls, short-eared owls and northern harriers, which are considered under grassland nesting species) based on the fatality monitoring program data and any other raptor fatalities found. If more than an average of two raptor fatalities are found per year, then the certificate holder shall assume that a significant impact on raptor habitat has occurred and shall implement appropriate mitigation.

For Stateline 3, the certificate holder shall determine significant impact to raptors (all eagles, hawks, falcons and owls, including burrowing owls) based on the fatality monitoring program data and any other raptor fatalities found. If the average annual fatality rate for raptors is greater than the threshold of concern (0.09 fatalities per megawatt) or the average annual fatality rate for raptor species of special concern is greater than the threshold of concern (0.06

[12] *Stateline Wind Project Wildlife Monitoring Annual Report: January - December 2006* (September 4, 2007), Table 5.

[13] Horned lark fatalities accounted for 50-percent of fatalities found in the Oregon survey area in 2006. The "all-birds" fatality rate was 0.81 fatalities per turbine. Thus, the single-species threshold of 0.5 fatalities/turbine/year was not exceeded.

fatalities per megawatt), then the certificate holder shall assume that a significant impact on raptor habitat has occurred and shall implement appropriate mitigation.[14]

FPL Vansycle reported the number of raptor fatalities in *Stateline Wind Project Wildlife Monitoring Final Report: July 2001 - December 2003*. This report analyzed two years of monitoring data collected between January 1, 2002, and December 31, 2003. Seven raptor fatalities were discovered during standardized fatality searches in Oregon and one additional raptor fatality was found in Oregon under the WRRS monitoring program in the two-year period. Therefore, the annual average was four raptor fatalities found per year.

On January 20, 2006, the Council determined that additional mitigation was appropriate. To mitigate the effects of the facility on raptors, the certificate holder shall implement the following:

(a) Artificial nest structures (ANS) for ferruginous hawks: FPL Vansycle provided funding for the construction, monitoring and maintenance of not less than three ANS. FPL Vansycle, in consultation with ODFW and the Department, determined suitable locations for the ANS and obtained landowner permission to construct the ANS. Suitable locations are locations within the Columbia Basin Physiographic Province in proximity to the Stateline project and on land that is expected to remain in stable ownership for the life of the Stateline facility. Suitable locations are locations that have adequate prey base for ferruginous hawks and that are remote from human activity. If the site chosen for an ANS is on public land or land managed by The Nature Conservancy, FPL Vansycle shall work out an appropriate agreement with the land management entity for the maintenance and monitoring of the site.

FPL Vansycle completed construction of the three ANS, using a design appropriate to attract ferruginous hawks, in early 2007. If an ANS is vandalized or destroyed (by fire or other cause) during the first five years after construction, FPL Vansycle shall pay the full cost of replacement. The Department shall determine the need for ongoing maintenance of the ANS beyond the first five years based on the monitoring data on the success of the ANS in attracting raptor use.

FPL Vansycle shall monitor the ANS and report annually to the Department regarding the actual use of the ANS by raptor species. Annual monitoring of all ANS shall continue for at least 10 years after construction of the ANS in 2006. If there has been no use of an ANS by raptors during the first five years, the Department may require FPL Vansycle to relocate the ANS or construct an ANS at an alternative suitable site.

In November 2016 FPL Vansycle and the Department (with input from ODFW) agreed on an amendment of this mitigation measure, due to historic low use of the three ANS, from 2007 through 2015.[15] By March 1, 2017 FPL Vansycle will establish three new ANS in locations of suitable habitat within the approved parcels. Two of the three original ANS (ANS1 and ANS3) will be maintained. Due to the lack of suitable foraging

[14] Raptor species of special concern include Swainson's hawk, ferruginous hawk, peregrine falcon, golden eagle, bald eagle, burrowing owl and any federal threatened or endangered raptor species.
[15] The certificate holder submitted a draft proposal identifying the proposed new ANS locations, siting selection methodology and criteria, monitoring, and maintenance activities on October 3, 2016 and a final proposal, as approved by ODOE in consultation with ODFW, on October 28, 2016.

habitat in the general area of ANS2, ANS2 will be removed and no longer be part of this mitigation measure. The new sites (ANS 4, 5, 6) are located in Umatilla County on private land with willing landowners and habitat highly likely to remain suitable, at a minimum for the period 2017–2021. Persistence of suitable habitat is likely to continue due to the extensive grasslands onsite that are enrolled in the federal Conservation Reserve Program (CRP). ANS1 and ANS3 will be inspected for maintenance needs and refreshed with sticks prior to the 2017 ferruginous hawk nesting period. These five ANS locations (ANS1, ANS3, ANS4, ANS5, ANS6) will be monitored annually for the first five years and then every five years for the life of the Stateline 1&2 facility. During the first five-year period, all five ANS will be refreshed with sticks on an as-needed basis and when the nest is not occupied by avian species. Annual reporting will be the same as described in lines 29 and 30 above. No additional mitigation will be required for the raptor mitigation requirement.

(b) Riparian and upland habitat fencing: FPL Vansycle contributed $9,000 to the Birch Creek Project for fencing of riparian and upland habitat. The Birch Creek project is a partnership between a private landowner and other interested organizations to improve upland and riparian wildlife habitat at a site that is within the Columbia Basin Physiographic Province about 30 miles south of the Stateline facility. The project site is near an area of historic nesting sites for ferruginous hawks, and it is likely that improved range conditions may enhance foraging habitat quality for the species, especially during the nesting and juvenile dispersal period. It is expected that other raptor species will benefit as well, including red-tailed hawks and American kestrels that may nest in deciduous or coniferous trees and forage in the uplands. FPL Vansycle shall provide periodic reports to the Department on the progress of the Birch Creek project. At a minimum, the certificate holder shall report on the project in the annual reports on the Stateline facility.

The Birch Creek project enclosed about 5,000 acres of Columbia Basin grassland and riparian and upper Birch Creek conifer/grassland. Approximately 15 miles of new high-tensile, wildlife-friendly fencing were built. The goal is to exclude cattle from riparian zones and upland habitats so the areas can recover from past grazing pressure. The fencing encloses uplands for raptor foraging and deciduous trees and shrubs for potential raptor nesting, perching and roosting.

(c) Contributions to the Blue Mountain Wildlife Rehabilitation Center: The Blue Mountain Wildlife Rehabilitation Center near Pendleton is a non-profit organization that provides treatment and care to orphaned, injured or sick native wildlife to enable their return to their natural habitat. To support the work of the Center in the rehabilitation of raptors, FPL Vansycle contributed $3,000 to the Center in 2006 and $1,500 in 2007 and 2008. The certificate holders shall make annual contributions of $1,500 each in 2009 and 2010. The certificate holders shall request that the funds be dedicated to paying for food and other supplies necessary for raptor rehabilitation. FPL Vansycle and the Department shall assess ongoing mitigation activities no later than December 31, 2010, and shall determine the amount of further contributions to the Center.

FPL Vansycle reported four raptor fatalities in Oregon in 2006.[16] This result matched the annual average of four raptor fatalities per year, based on the data for 2002 and 2003. If Stateline 3 turbines are built, the certificate holder will conduct standardized searches for one year in the Stateline 3 area. The Wildlife Response and Reporting System will be in place for the life of the facility and will include reporting of any incidental raptor fatalities found by maintenance personnel. If the threshold of concern is not exceeded but fatalities of a sensitive raptor species, such as ferruginous hawk or Swainson's hawk are at a level of concern, the Department may require the certificate holder to implement mitigation for that species.

Other Bird Species and Bats

Mitigation measures for grassland nesting birds and for raptors, if implemented, would also benefit other bird species and bats. For Stateline 1&2, there was no mitigation threshold for these species. For Stateline 3, the threshold of concern for bats as a group is 2.5 fatalities per megawatt. If fatalities to these species exceed the threshold of concern or are higher than expected and are at a level of biological concern, the Department may require the certificate holder to implement mitigation for these species.

The monitoring data presented in *Stateline Wind Project Wildlife Monitoring Final Report: July 2001 - December 2003* show that fatality rates for other bird species and bats were not higher than expected. The overall bat fatality rate was 1.7 fatalities per megawatt, which is below the U.S. average rate of 2.1 fatalities per megawatt.[17] The data collected in 2006 on turbines in the Stateline 2 area resulted in lower fatality rates for both birds and bats, compared to the larger Stateline sample studied in 2002 and 2003.[18] Pending analysis of additional data from future monitoring, the Council determined that additional mitigation for facility impacts to other bird species and bats was not required as of January 20, 2006.

13. Amendment of the Plan

This Wildlife Monitoring and Mitigation Plan may be amended from time to time by agreement of the certificate holders 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.

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[16] *Stateline Wind Project Wildlife Monitoring Annual Report: January - December 2006* (September 4, 2007), Table 2.

[17] The overall bird fatality rate of 2.9 fatalities per megawatt was "slightly below the average for new generation wind projects in the U.S." (3.05 fatalities per megawatt). *Stateline Wind Project Wildlife Monitoring Final Report: July 2001 - December 2003* (December 2004), p. 26.

[18] *Stateline Wind Project Wildlife Monitoring Annual Report: January - December 2006* (September 4, 2007), Table 5.

Attachment H: Draft Erosion Sediment Control Plan

NEXTERA
VANSYCLE II WIND ENERGY PROJECT
EROSION AND SEDIMENT CONTROL PLAN (ESCP) DRAWINGS

1750 SW HARBOR WAY, SUITE 400
PORTLAND, OR 97201
PHONE: (503) 221-8636 FAX: (503) 227-1287
www.tetratech.com

TETRA TECH

STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES:

1. Hold a pre-construction meeting of project construction personnel that includes the inspector to discuss erosion and sediment control measures and construction limits. (Schedule A.8.c.i.(3))
2. All inspections must be made in accordance with DEQ 1200-C permit requirements.
3. Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements.
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. During inactive periods of greater than seven (7) consecutive calendar days, retain the ESCP at the construction site or at another location. (Schedule B.2.a)
5. All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Schedule A 8.a)
6. The ESCP measures shown on this plan are minimum requirements for anticipated site conditions. During the construction period, upgrade these measures as needed to comply with all applicable local, state, and federal erosion and sediment control regulations. (Schedule A.8.c.ii.(1)(c))
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent. (Schedule A.12.c.III)
8. Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A 8.c.ii.(1)(d))
9. Identify, mark, and protect (by fencing off or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Schedule A.8.c.i.(1) & (2))
10. Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Schedule A.7.b.iii(1) and A.7.b.iii(3))
11. Erosion and sediment control measures including perimeter sediment control must be in place before vegetation is disturbed and must remain in place and be maintained, repaired, and promptly implemented following procedures established for the duration of construction, including protection for active storm drain inlets and catch basins and appropriate non-stormwater pollution controls. (Schedule A.7.d.i and A.8.c)
12. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
13. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses and for all roadways including gravel roadways. (Schedule A.8.c.ii.(2))
14. Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
15. Prevent tracking of sediment onto public or private roads using BMPs such as: graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Schedule A 7.d.ii.(1) and A.8.c.i(4))
16. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(3))
17. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, leftover paints, solvents, and glues from construction operations. (Schedule A.7.e.i.(2))
18. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Sch A 7.e.iii.)
19. Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A 7.b.ii)
20. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Schedule A.9.b.iii)
21. If a stormwater treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Schedule A.9.d)
22. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Schedule A 7.b)
23. At the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Schedule A 7.e.ii.(2))
24. Construction activities must avoid or minimize excavation and creation of bare ground during wet weather. (Schedule A.7.a.i)
25. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Schedule A.9.c.I)
26. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height. and before BMP removal. (Schedule A.9.c.II)
27. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Schedule A.9.c.iii & iv)
28. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean up of sediment shall be performed according to the Oregon Division of State Lands required timeframe. (Schedule A.9.b.I)
29. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Schedule A.9.b.II)
30. The entire site must be temporarily stabilized using vegetation or a heavy mulch layer, temporary seeding, or other method should all construction activities cease for 30 days or more. (Schedule A.7.f.i)
31. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and A tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Schedule A.7.f.II)
32. Provide permanent erosion control measures on all exposed areas. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. However, do remove all temporary erosion control measures as exposed areas become stabilized, unless doing so conflicts with local requirements. Properly dispose of construction materials and waste, including sediment retained by temporary BMPs. (Schedule A.7.b.iii(2) and A.8.c.iii)

NARRATIVE DESCRIPTIONS

PROJECT LOCATION

NINE MILES WEST OF MILTON-FREEWATER
UMATILLA COUNTY, OREGON
LATITUDE= 45°54'16" N LONGITUDE= 118°40'14" W

EXISTING SITE CONDITIONS

- 43 SIEMENS SWT-2.3-93 TURBINES
- 14.6 MILES OF ACCESS ROADS
- O&M BUILDING, SUBSTATION, AND
- TRANSMISSION LINE

NO CHANGES IN CONDITIONS WILL BE A PART OF CONSTRUCTION.

PROPERTY DESCRIPTION

NEAR WASHINGTON-OREGON STATE LINE UMATILLA COUNTY, OREGON.

SITE SOIL CLASSIFICATION:

48e – Lickskillet very stony loam, 7 to 40 percent slopes
49f – Lickskillet Nansene association, 35 to 70 percent slopes
54b – Mikkalo silt loam, 2 to 7 percent slopes
60f – Nansene silt loam, 35 to 70 percent slopes
80b – Rizville silt loam, 2 to 7 percent slopes
80c – Rizville silt loam, 7 to 12 percent slopes
80d – Rizville silt loam, 12 to 25 percent slopes
81e – Rizville silt loam, 25 to 40 percent slopes
114b – Walla Walla silt loam, 1 to 7 percent slopes
114c – Walla Walla silt loam, 7 to 12 percent slopes
115d – Walla Walla silt loam, 12 to 25 percent slopes

RECEIVING WATER BODIES:

WATERBODIES IN THE PROJECT AREA INCLUDE 2 PERENNIAL STREAMS; SC9 AND SC14, AND NUMEROUS INTERMITTENT/EPHEMERAL EROSIONAL FEATURES.

NATURE OF CONSTRUCTION ACTIVITY AND ESTIMATED TIME TABLE

NEXTERA TO REPOWER THE VANSYCLE II WIND FARM
REPOWERING TO CONSIST OF:

- REPLACING EXISTING NACELLES AND TURBINE BLADES FOR A NEW MAXIMUM HEIGHT OF APPROXIMATELY 440 FEET (THE FACILITY IS CURRENTLY PERMITTED FOR MAXIMUM HEIGHT OF 416 FEET) ON THE EXISTING TOWERS.
- REDEVELOPING, TO THE EXTENT NECESSARY, PREVIOUSLY APPROVED TEMPORARY LAYDOWN AREAS (ENTIRELY IN PREVIOUSLY DISTURBED AREAS)
- REDEVELOPING, TO THE EXTENT NECESSARY, PREVIOUSLY APPROVED TEMPORARY ACCESS ROAD IMPROVEMENTS (ENTIRELY IN PREVIOUSLY DISTURBED AREAS.)

CLEARING/GRUBBING/ACCESS ROADS (DATES, FROM: FEB 2019 & TO: NOV 2019)
TURBINE BLADE REPLACEMENT (DATES, FROM: APR 2019 & TO: NOV 2019)

TOTAL SITE AREA: APPROX. 7200 ACRES
POTENTIAL MAX DISTURBED AREA: APPROX. 39 ACRES ACCESS ROADS, 15 ACRES LAYDOWN YARD

THE PERMITTEE IS REQUIRED TO MEET ALL THE CONDITIONS OF THE 1200C PERMIT. THIS ESCP AND GENERAL CONDITIONS HAVE BEEN DEVELOPED TO FACILITATE COMPLIANCE WITH THE 1200C PERMIT REQUIREMENTS. IN CASES OF DISCREPANCIES OR OMISSIONS, THE 1200C PERMIT REQUIREMENTS SUPERCEDE REQUIREMENTS OF THIS PLAN.

DEVELOPER

DEVELOPER/COMPANY: NEXTERA
CONTACT: MIKE PAPPALARDO
ADDRESS: 3256 WINTERCREEK DR
EUGENE, OR, 97405
PHONE: (541) 302-1345
EMAIL: MIKE.PAPPALARDO@NEXTERAENERGY.COM

PLANNING/ENGINEERING/ SURVEYING FIRM

COMPANY: TETRA TECH
CONTACT: ANNEKE SOLSBY
ADDRESS: 1750 SW HARBOR WAY, SUITE 400
PORTLAND, OR 97201
PHONE: (503) 721-7217
EMAIL: ANENEKE.SOLSBY@TETRATECH.COM

PERMITTEE'S SITE INSPECTOR

INSPECTOR: TBD
COMPANY/AGENCY: TBD
PHONE: TBD
EMAIL: TBD
DESCRIPTION OF EXPERIENCE: TBD

INSPECTION FREQUENCY: TBD

SITE CONDITION	MINIMUM FREQUENCY
1. ACTIVE PERIOD	DAILY WHEN STORMWATER RUNOFF, INCLUDIGN RUNOFF FROM SNOWMELT, IS OCCURING.
2. PRIOR TO THE SITE BECOMING INACTIVE OR IN ANTICIPATION OF SITE INACCESSIBILITY.	ONCE TO ENSURE THAT EROSION AND SEDIMENT CONTROL MEASURES ARE IN WORKING ORDER. ANY NECESARRY MAINTENANCE AND REPAIR MUST BE MADE PRIOR TO LEAVING THE SITE.
3. INACTIVE PERIODS GREATER THAN FOURTEEN CONSECTUTIVE CALENDAR DAYS.	ONCE EVERY TWO WEEKS.
4. PERIODS DURING WHICH THE SITE IS INACCESSIBLE DUE TO INCLEMENT WEATHER.	IF PRACTICAL, INSPECTIONS MUST OCCUR DAILY AT A RELEVANT AND ACCESSIBLE DISCHARGE POINT OR DOWNSTREAM LOCATION.

- HOLD A PRE-CON MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE EC INSPECTOR.
- ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.
- INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS.
- REVSIONS TO THE APPROVED ESC PLAN MUST BE SUBMITTED TO DEQ OR AGENT IN ACCORDANCE WITH CURRENT 1200-C PERMIT

LOCAL AGENCY-SPECIFIC EROSION CONTROL NOTES:

1. OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF AL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
2. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BOUNDARIES OF THE CLEARING LIMITS, VEGETATED BUFFERS, AND ANY SENSITIVE AREAS SHOWN ON THIS PLAN SHALL BE CLEARLY DELINEATED IN THE FIELD. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE IS PERMITTED BEYOND THE CLEARING LIMITS. THE OWNER/PERMITTEE MUST MAINTAIN THE DELINEATION FOR THE DURATION OF THE PROJECT. NOTE: VEGETATED CORRIDORS TO BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL.
3. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BMP'S THAT MUST BE INSTALLED ARE A GRAVEL CONSTRUCTION ENTRANCE, PERIMETER SEDIMENT CONTROL, AND INLET PROTECTION. THESE BMP'S MUST BE MAINTAINED FOR THE DURATION OF THE PROJECT.
4. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE THE PLACE NO LATER THAN SEPTEMBER 1; THE TYPE AND PERCENTAGES OF SEED IN THE MIX MUST BE IDENTIFIED ON THE PLANS.
5. ALL PUMPING OF SEDIMENT LADEN WATER SHALL BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP I.E. (FILTER BAG).
6. THE ESC PLAN MUST E KEPT ON SITE. ALL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED PROPERLY TO ENSURE THAT SEDIMENT R SEDIMENT LADEN WATER DOES NOT ENTER A SURFACE SYSTEM, ROADWAY, OR OTHER PROPERTIES.
7. THE ESC MEASURES SHOWN ON THIS PAN ARE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE MEASURES SHALL BE UPGRADED AS NEEDED TO COMPLY WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL EROSION CONTROL REGULATIONS CHANGES TO THE APPROVED ESC PLAN MUST BE SUBMITTED IN THE FORM OF AN ACTION PLAN TO DEQ PER THE 1200 C PERMIT.
8. IN AREAS SUBJECT TO WIND EROSION, APPROPRIATE BMP'S MUST BE USED WHICH MAY INCLUDE THE APPLICATION OF FINE WATER SPRAYING, PLASTIC SHEETING, MULCHING OR OTHER APPROVED MEASURES.
9. ALL EXPOSED SOILS MUST BE COVERED DURING THE WET WEATHER PERIOD.

BMP MATRIX FOR CONSTRUCTION PHASES

REFER TO DEQ GUIDANCE MANUAL FOR A COMPREHENSIVE LIST OF AVAILABLE BMP'S

	2019										
BMPS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pipe Slope Drains												
Energy Dissipaters												
Temporary Diversion Dikes												
Check Dams												
Temporary Seeding and Planting											X	X
Permanent Seeding and Planting												
Mycornhizae/Biofertilizers												
Mulches (type)							X	X	X	X	X	
Construction Entrance				X								
Compost Blankets												
Compost Socks												
Compost Berm												
Soil Trackifiers											X	X
Sodding Vegetative Buffer Strips												
Sediments Fencing		X	X	X	X	X	X	X	X	X	X	
Erosio Control Blankets & Mts												
Earth Dikes												
Drainage Swales												
Rock Outlet Protection												
Sediments Trap												
Straw Wattles												
Storm Drain Inlet Protection												
Temporary or Permanent Sedimentation Basins												
Unpaved Roads Graveled or other BMP on Road												
Dewatering												
Paving Operations Controls												
Concrete Truck Washout												

RATIONALE STATEMENT

A COMPREHENSIVE LIST OF AVAILABLE BEST MANAGEMENT PRACTICES (BMP) OPTIONS BASED ON DEQ'S GUIDANCE MANUAL HAS BEEN REVIEWED TO COMPLETE THIS EROSION AND SEDIMENT CONTROL PLAN. SOME OF THE ABOVE LISTED BMP'S WERE NOT CHOSEN BECAUSE THEY WERE DETERMINED TO NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL FOR THIS PROJECT BASED ON SPECIFIC SITE CONDITIONS, INCLUDING SOIL CONDITIONS TOPOGRAPHIC CONSTRAINTS ACCESSIBILITY TO THE SITE, AND OTHER RELATED CONDITIONS, AS THE PROJECT PROGRESSES AND THERE IS A NEED TO REVISE THE ESC PLAN, AN ACTION PLAN WILL BE SUBMITTED.

_____
INITIAL

PROJECT LOCATION:

UMATILLA COUNTY, OREGON

CLIENT INFORMATION:

NEXTERA
700 UNIVERSE BLVD
JUNO BEACH, FL, 33408

Tt PROJECT No.:

194-6389

CLIENT PROJECT No.:

Vansycle II Repower Project

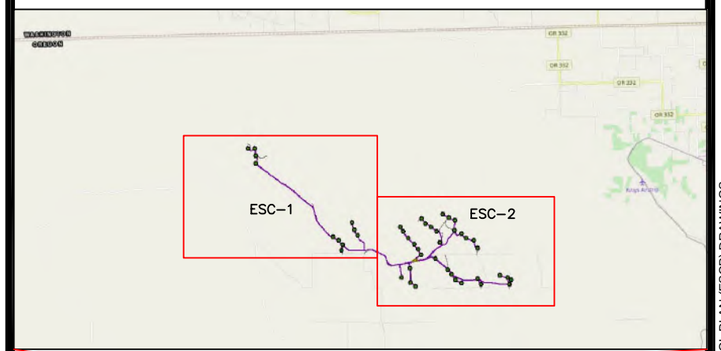
PROJECT DESCRIPTION / NOTES:

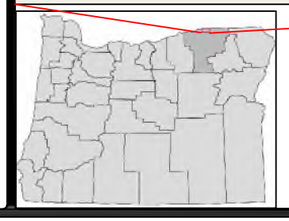
NEXTERA TO REPOWER THE VANSYCLE II FACILITY (FORMERLY STATELINE 3). THE PURPOSE OF THE REPOWER IS TO TAKE ADVANTAGE OF TECHNOLOGICAL ADVANCEMENTS TO OPTIMIZE CONSISTENT ENERGY OUTPUT. THE PEAK GENERATING CAPACITY WILL REMAIN THE SAME(98.9 MEGAWATTS).

ISSUED:

ISSUED FOR EDQ REVIEW

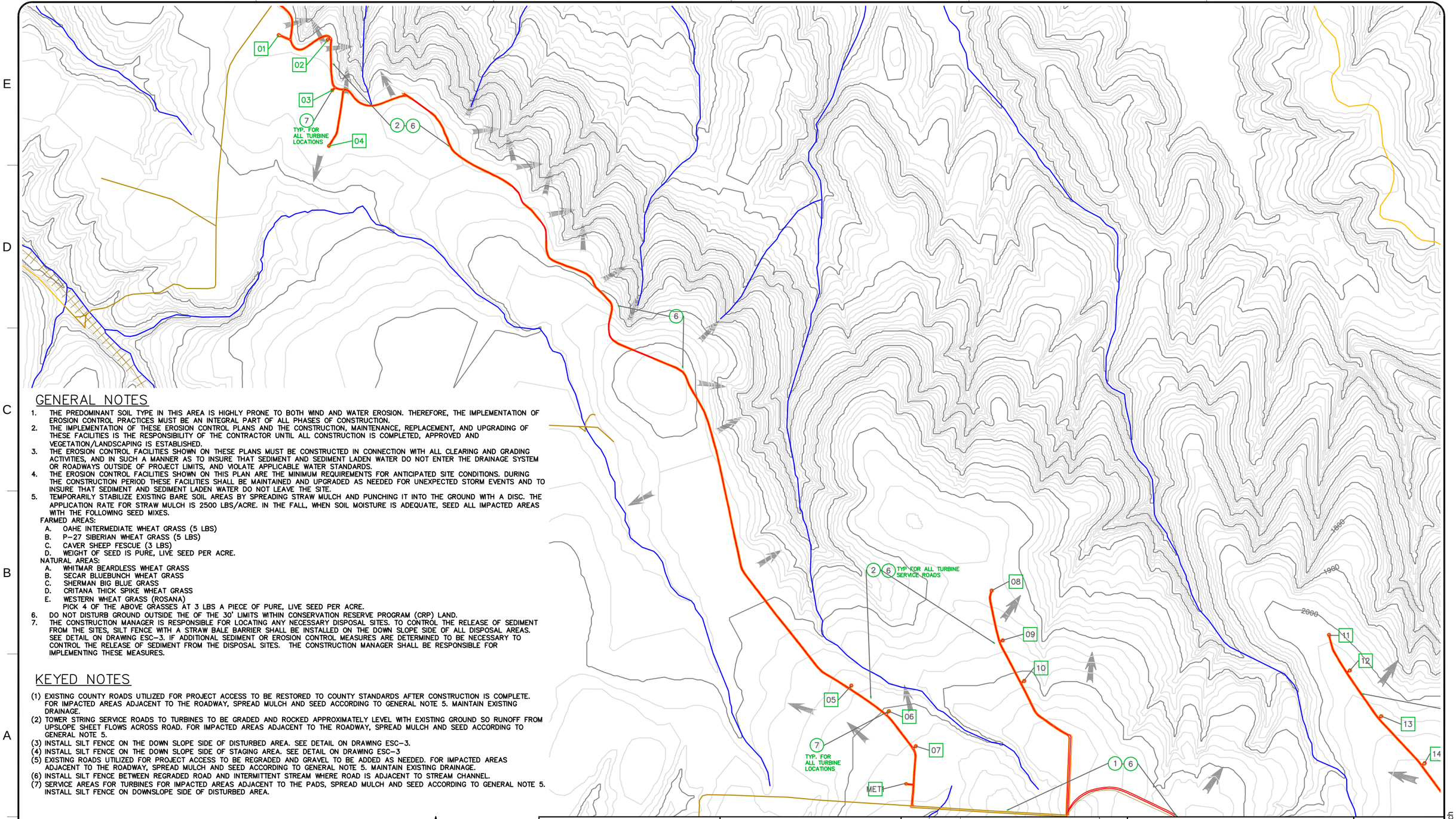
VICINTY MAP





SHEET INDEX

EROSION AND SEDIMENT CONTROL PLAN (ESCP) DRAWINGS



GENERAL NOTES

1. THE PREDOMINANT SOIL TYPE IN THIS AREA IS HIGHLY PRONE TO BOTH WIND AND WATER EROSION. THEREFORE, THE IMPLEMENTATION OF EROSION CONTROL PRACTICES MUST BE AN INTEGRAL PART OF ALL PHASES OF CONSTRUCTION.
2. THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED, APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
3. THE EROSION CONTROL FACILITIES SHOWN ON THESE PLANS MUST BE CONSTRUCTED IN CONNECTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR ROADWAYS OUTSIDE OF PROJECT LIMITS, AND VIOLATE APPLICABLE WATER STANDARDS.
4. THE EROSION CONTROL FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD THESE FACILITIES SHALL BE MAINTAINED AND UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT LEAVE THE SITE.
5. TEMPORARILY STABILIZE EXISTING BARE SOIL AREAS BY SPREADING STRAW MULCH AND PUNCHING IT INTO THE GROUND WITH A DISC. THE APPLICATION RATE FOR STRAW MULCH IS 2500 LBS/ACRE. IN THE FALL, WHEN SOIL MOISTURE IS ADEQUATE, SEED ALL IMPACTED AREAS WITH THE FOLLOWING SEED MIXES.

   FARMED AREAS:
   - A. OAHE INTERMEDIATE WHEAT GRASS (5 LBS)
   - B. P-27 SIBERIAN WHEAT GRASS (5 LBS)
   - C. CAVER SHEEP FESCUE (3 LBS)
   - D. WEIGHT OF SEED IS PURE, LIVE SEED PER ACRE.

   NATURAL AREAS:
   - A. WHITMAR BEARDLESS WHEAT GRASS
   - B. SECAR BLUEBUNCH WHEAT GRASS
   - C. SHERMAN BIG BLUE GRASS
   - D. CRITANA THICK SPIKE WHEAT GRASS
   - E. WESTERN WHEAT GRASS (ROSANA)

   PICK 4 OF THE ABOVE GRASSES AT 3 LBS A PIECE OF PURE, LIVE SEED PER ACRE.
6. DO NOT DISTURB GROUND OUTSIDE THE OF THE 30' LIMITS WITHIN CONSERVATION RESERVE PROGRAM (CRP) LAND.
7. THE CONSTRUCTION MANAGER IS RESPONSIBLE FOR LOCATING ANY NECESSARY DISPOSAL SITES. TO CONTROL THE RELEASE OF SEDIMENT FROM THE SITES, SILT FENCE WITH A STRAW BALE BARRIER SHALL BE INSTALLED ON THE DOWN SLOPE SIDE OF ALL DISPOSAL AREAS. SEE DETAIL ON DRAWING ESC-3. IF ADDITIONAL SEDIMENT OR EROSION CONTROL MEASURES ARE DETERMINED TO BE NECESSARY TO CONTROL THE RELEASE OF SEDIMENT FROM THE DISPOSAL SITES. THE CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE MEASURES.

KEYED NOTES

(1) EXISTING COUNTY ROADS UTILIZED FOR PROJECT ACCESS TO BE RESTORED TO COUNTY STANDARDS AFTER CONSTRUCTION IS COMPLETE. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5. MAINTAIN EXISTING DRAINAGE.
(2) TOWER STRING SERVICE ROADS TO TURBINES TO BE GRADED AND ROCKED APPROXIMATELY LEVEL WITH EXISTING GROUND SO RUNOFF FROM UPSLOPE SHEET FLOWS ACROSS ROAD. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5.
(3) INSTALL SILT FENCE ON THE DOWN SLOPE SIDE OF DISTURBED AREA. SEE DETAIL ON DRAWING ESC-3.
(4) INSTALL SILT FENCE ON THE DOWN SLOPE SIDE OF STAGING AREA. SEE DETAIL ON DRAWING ESC-3
(5) EXISTING ROADS UTILIZED FOR PROJECT ACCESS TO BE REGRADED AND GRAVEL TO BE ADDED AS NEEDED. FOR IMPACTED AREAS ADJACENT TO THE ROADWAY, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5. MAINTAIN EXISTING DRAINAGE.
(6) INSTALL SILT FENCE BETWEEN REGRADED ROAD AND INTERMITTENT STREAM WHERE ROAD IS ADJACENT TO STREAM CHANNEL.
(7) SERVICE AREAS FOR TURBINES FOR IMPACTED AREAS ADJACENT TO THE PADS, SPREAD MULCH AND SEED ACCORDING TO GENERAL NOTE 5. INSTALL SILT FENCE ON DOWNSLOPE SIDE OF DISTURBED AREA.

LEGEND

- (3) KEYED NOTES (SEE ESC-1)
- EXISTING STREAM
- SERVICE ROAD
- ACCESS ROAD
- ROAD WITH MODIFICATIONS
- SURFACE FLOW DIRECTION
- EXISTING 20' CONTOUR
- [2] WIND TURBINE LOCATION
- SUBSTATION
- LAYDOWN YARD
- RAILROAD TIE

N

0 1000' 2000' 4000'

SCALE: 1" = 2000'

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MARK	DATE	DESCRIPTION	BY

NEXTERA ENERGY

VANSYCLE II WIND ENERGY PROJECT

EROSION AND SEDIMENT CONTROL PLAN
SECTION 1

Project No.:	194-6389
Designed By:	ENM
Drawn By:	ENM
Checked By:	JPP

ESC-1

Bar Measures 1 inch