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## **EXHIBIT W SITE RESTORATION**

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### **List of Attachments**

Attachment W1: Cost Estimate for Decommissioning



## Introduction

The information provided in this Exhibit is intended to demonstrate that the Facility site can be successfully restored to a useful, non-hazardous condition that provides for agricultural use following Facility retirement in accordance with OAR 345-022-0050(1). Additionally, the Applicant will ensure that the site will be restored to the condition described in this Exhibit by securing the appropriate amount of funding required for decommissioning and subsequent restoration. The following sections address subsections (A) through (E) of OAR 345-021-0010(1)(w).

### W.1 Estimated Useful Life of Proposed Facility

**OAR 345-021-0010(1)(w)** *Information about site restoration, providing evidence to support a finding by the Council as required by OAR 345-022-0050(1). The applicant shall include:*

(A) *The estimated useful life of the proposed facility.*

#### **RESPONSE**

For the purposes of the ASC and financial evaluations, the Applicant assumes that the Facility will remain in operation for 25 to 30 years. Currently, many older wind energy projects are being “repowered” with upgraded towers and infrastructure that make the facilities more efficient. If, in the future, the Facility is repowered in this way, the useful life could be much longer than 30 years. In this case, the Applicant will seek the required approvals for repowering.

### W.2 Site Restoration Actions and Tasks

(B) *Specific actions and tasks to restore the site to a useful, non-hazardous condition.*

#### **RESPONSE**

Decommissioning is a step-by-step deconstruction process that will involve removing and disposing of the infrastructure and appurtenant facilities associated with the Facility. At the time of decommissioning, a decommissioning plan will be prepared to address the specific details of decommissioning. The Applicant will also obtain any necessary additional authorizations from regulatory agencies in order to decommission the Facility components and equipment.

In general, decommissioning of the Facility will involve disassembling the wind turbine generators and associated infrastructure and salvaging valuable equipment, such as wind turbines, towers, electric generators, substation components, and materials such as steel and copper. Unsalvageable materials will be disposed of at authorized locations.

Once all above-ground facilities have been dismantled, the concrete turbine pads will be removed to the required depth below the soil surface. Foundations will be excavated to remove all anchor bolts, rebar, conduits, cable and concrete to a depth of at least 3 ft, to allow for agricultural use of the Facility site after decommissioning. Underground electrical and communication cable buried below 3 ft will be left in place. Surface soil will be restored to pre-construction conditions as reasonably possible. Soil will be graded to restore original contours, mulched, and reseeded with an appropriate native seed mix or agricultural crop, depending on the surrounding conditions and landowner preference.

Facility access roads and improvements to existing private roads may be left in place based on landowner preference. If the landowner chooses to have roads removed, road surface gravel will be removed and transported to a pre-approved disposal site and drainage structures will be removed and backfilled, graded, and re-vegetated. Improvements made to public roads will remain in place.

After decommissioning, the Facility site will be restored to the extent restoration is desired by the landowners (and consistent with code and permit requirements) and in order to reflect adjacent cropland or habitat communities existing at the time of restoration to the reasonable extent possible and to minimize permanent impacts to fish and wildlife habitat. All decommissioning activities will be completed consistent with the Revegetation Plan that is required as part of the Final Order.

As suggested, OSR Extension Service (2011), the Applicant will work with the local USDA NRCS office to ensure the integrity of structures that remain. When turbine towers are removed, the order of surrounding soil layers will be preserved and returned in the same order it was removed. In areas that will return to crop production, soil testing will be completed and fertilizer applied, where necessary. In the limited areas where production will not resume, seeding will be completed to prevent invasive weeds from invading and becoming established.

### **W.3 Estimated Costs of Site Restoration**

*(C) An estimate, in current dollars, of the total and unit costs of restoring the site to a useful, non-hazardous condition.*

#### **RESPONSE**

The estimated total and unit costs of restoring the site to a useful nonhazardous condition in third quarter 2011 dollars ranges from \$15,193,900 to \$16,988,444 and is detailed for the maximum turbine layout and the minimum turbine layout in Attachment W1. The estimate is based on comparison of the cost to retire a Facility that includes a range of equipment for 219 GE 82.5 1.6-MW turbines to 166 Vestas V112 3.0-MW turbines.

### **W.4 Justification of Methods and Assumptions Used to Estimate Costs**

*(D) A discussion and justification of the methods and assumptions used to estimate site restoration costs.*

#### **RESPONSE**

The Applicant has prepared a decommissioning estimate for the 219, 1.6-MW turbines (maximum turbine layout) and the 166, 3.0-MW turbines (minimum turbine layout). This estimate is provided in Attachment W1. The Applicant prepared the estimate based on the draft Site Restoration Cost Estimating Guide provided by the ODOE (January 2011) information from past experience (see Exhibit D for a description of the Applicant's experience), available industry information, estimates prepared by the Applicant's consulting team, and available information from turbine manufacturers. The cost estimate includes removal of turbines, towers, transformers, foundations, metrological towers, collector substations, the O&M building, aboveground collector and generator lead lines, underground collector lines, and removal and restoration of roadway areas.

The Applicant's cost estimate also includes estimates for general costs associated with permits, mobilization, utility disconnects as well as administration and project management costs. A future development contingency is also included to ensure that the site is restored to a useful nonhazardous condition. It should be noted the estimated costs for road removal and restoration is high because the landowner may choose to retain roads. The Applicant requests that the EFSC consider a reduction in the overall cost of decommissioning to reflect this reduction in decommissioning cost.

#### **W.5 Proposed Monitoring Plan for Hazardous Materials**

*(E) For facilities that might produce site contamination by hazardous materials, a proposed monitoring plan, such as periodic environmental site assessment and reporting, or an explanation why a monitoring plan is unnecessary.*

#### **RESPONSE**

Because there are minimal amounts of hazardous and solid waste associated with construction and operation of the Facility, restoring the site to a useful condition will not require neutralization or storage of any hazardous or toxic materials. Facility features will be removed to below grade, and soil will be restored and revegetated to a condition similar to the surrounding environment at the time of retirement. Therefore, a monitoring plan is unnecessary.

#### **W.6 Proposed Site Certificate Condition**

Similar to the conditions proposed by previously-approved wind energy facilities in the vicinity of the Facility, the Applicant proposes the following condition:

#### **Condition 58**

*The certificate holder shall restore areas disturbed by Facility construction but not occupied by permanent Facility structures according to the methods and monitoring procedures described in the Revegetation Plan, and as amended from time to time.*

## **W.7 References**

Oregon State University (OSU) Extension Service. 2011. Email correspondence between Jordan Maley, OSU Extension Service – Gilliam County, and Donette Miranda, HDR Engineering, Inc. November 3, 2011.

Oregon Department of Energy. 2011. Draft Site Restoration Cost Estimating Guide.

**ATTACHMENT**

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**Attachment W1: Cost Estimate for Decommissioning**