

# Helix Wind Power Facility: Revegetation Plan

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1 **I. Introduction**

2 This Revegetation Plan applies to the areas of construction disturbance surrounding the  
3 permanent facility components of the Helix Wind Power Facility.<sup>1</sup> The objective of revegetation  
4 is to restore the disturbed areas to pre-disturbance condition or better. The site certificate for the  
5 facility requires restoration of these areas. This plan has been developed in consultation with the  
6 Oregon Department of Fish and Wildlife (ODFW).

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

20 **II. Description of the Facility Site**

21 The facility is located in Umatilla County, Oregon, on private agricultural land. Most of the  
22 land is used for dryland winter wheat cultivation and occasionally for livestock grazing. Soils are  
23 typically loess formations of well-drained, moderately permeable, fertile silt loams over basalt. The  
24 area receives approximately 13 inches of precipitation annually, most of which occurs between  
25 October 1 and March 31.

26 The site is within the Columbia Plateau physiographic province. The facility is located on  
27 an upland plateau at elevations ranging from approximately 970 feet to 1,890 feet. Most of the  
28 historic native vegetation in the project area has been modified by human activities.  
29 Approximately 51 percent of the site is in cropland. Small areas of native perennial bunchgrass  
30 are present and some of the previously farmed land has been re-established as grassland to meet  
31 the standards specified by the Conservation Reserve Program (CRP). Very little intact native  
32 shrub (sagebrush) habitat exists. Grasslands located on shallow soils and deep soils are the  
33 highest quality native perennial grasslands present on the site. The vegetation and habitat quality  
34 of the site are described in more detail in the Final Order on the Application for the Helix Wind  
35 Power Facility.

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<sup>1</sup> This plan is incorporated by reference in the site certificate for the Helix Wind Power Facility 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.

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## 1 **III. Revegetation Methods**

2 The certificate holder shall begin restoration of disturbed areas as soon as possible after  
3 completion of construction activity in the area to be restored. Restoration measures include soil  
4 preparation and seeding as described below. Seeding should be done at the appropriate time of  
5 year to facilitate seed germination and root establishment, based on weather conditions. The  
6 certificate holder shall choose planting methods based on site-specific factors such as slope,  
7 erosion potential, and the size of the area in need of revegetation as well as knowledge gained  
8 from restoration efforts at other regional wind facilities in similar habitat and soils.

### 9 **1. Correction for Compaction**

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

### 18 **2. Revegetation of Cropland**

19 The certificate holder shall consult with the landowner and farm operator to determine  
20 which fields should be planted in wheat or other crops and which should be left fallow. The  
21 certificate holder shall consult with the landowner and farm operator to determine species  
22 composition for planting, seed and fertilizer application rates and application methods. The  
23 certificate holder may reimburse the landowner or farm operator for the work or hire contractors  
24 to carry out the restoration activities on cropland.

### 25 **3. Revegetation of Wildlife Habitat Areas**

26 The certificate holder shall seed all disturbed grassland, shrub-steppe and other wildlife  
27 habitat subtype areas that are not cropland or developed areas. The certificate holder shall  
28 determine the appropriate seed mix and application rate through consultation with the landowner,  
29 ODFW, the USDA Farm Service Agency (for CRP field restoration, if needed) and the Oregon  
30 Department of Energy (Department). The seed mix should include a combination of grasses,  
31 forbs and shrubs based on the characteristics of the affected area. The mix should contain native  
32 species selected based on relative availability and compatibility with local growing conditions.  
33 Seed mix selection should consider soil erosion potential, soil type, seed availability and the need  
34 for using native or native-like species. The certificate holder shall use seed provided by a  
35 reputable supplier and complying with the Oregon Seed Law.

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

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1           Narrow areas of soil disturbance due to off-road trenching, off-road crane paths and other  
2 limited disturbance may be seeded and left without mulch. Hand seeding, rather than mechanical  
3 seeding, will be used in small areas where the use of planting equipment is likely to increase the  
4 area of disturbance. Larger disturbed areas will be seeded followed by application of weed-free  
5 straw or other mulch to protect against erosion and preserve moisture. No-till methods, such as  
6 drilling or broadcast seeding, will be employed.

7           In the arid climate of the site, successful seeding is limited to mid-fall through very early  
8 spring. If seeding of large disturbance areas cannot be accomplished within this optimal seeding  
9 period within 2 months after construction disturbance, the areas will be mulched or otherwise  
10 treated to minimize erosion until seeding can be done in the fall.

## 11   **4. Weed Control**

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

## 20   **IV. Monitoring**

### 21   **1. Revegetation Record**

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

### 30   **2. Monitoring Procedures**

#### 31   (a) Cropland

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

#### 37   (b) Wildlife Habitat Areas

38           The certificate holder shall monitor the revegetation of wildlife habitat areas as described  
39 in this section unless the landowner has converted the area to a use inconsistent with the success  
40 criteria. The certificate holder shall employ a qualified investigator (an independent botanist or

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1 revegetation specialist) to examine all non-cropland revegetation areas to assess vegetation cover  
2 (species, structural stage, etc.) and progress toward meeting the success criteria described below  
3 in Subsection 3. Within representative sample plots, the investigator will estimate the  
4 percentages of the area that are covered by bare soil, desirable native vegetation or invasive weed  
5 species. The investigator will qualitatively assess the degree of erosion at each site. The  
6 investigator will compare the sample plots with representative reference plots of the same habitat  
7 category and subtype.

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

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

19 Revegetation monitoring surveys will be conducted annually beginning one year after  
20 initial restoration seeding and continuing until there is sufficient evidence of progress for the  
21 Department to conclude that additional revegetation efforts in the area are not necessary.  
22 Thereafter, the restored areas will be surveyed at 5-year intervals for the life of the facility.<sup>2</sup>

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

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

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

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<sup>2</sup> As used in this plan, “life of the facility” means continuously until the facility site is restored and the site certificate is terminated in accordance with OAR 345-027-0110.

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1 **3. Success Criteria**

2 (a) Cropland

3 Cropland areas are successfully revegetated when the replanted areas achieve crop  
4 production comparable to adjacent non-disturbed cultivated areas. The certificate holder shall  
5 consult with the landowner or farmer to determine whether these areas have been successfully  
6 revegetated.

7 (b) Wildlife Habitat Areas

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

16 **4. Remedial Action in Wildlife Habitat Areas**

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

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

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

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

34 If a wildlife habitat area is damaged by wildfire (including any fire that has a cause  
35 related to operation of the Helix Wind Power Facility) during the first 5 years following initial  
36 seeding, the certificate holder shall work with the landowner to restore the damaged area. The  
37 certificate holder shall report to the Department on the damage caused by wildfire and the cause  
38 of the fire, if known. The certificate holder shall continue to report on revegetation progress as  
39 described in this plan. If a fire occurs on-site after the first 5 years and facility operation is  
40 determined to be the cause of the fire, the certificate holder shall consult with the landowner  
41 regarding remediation.

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

### **6   5. Reporting**

7           The certificate holder shall report to the Department on the success of revegetation in  
8 cropland areas on an annual basis until the areas have been successfully revegetated.

9           For wildlife habitat areas, the certificate holder shall report the investigator’s findings and  
10 recommendations regarding revegetation success to the Department and to ODFW. Reporting  
11 will continue on an annual basis until the investigator finds that the condition of a revegetated  
12 area satisfies the criteria for revegetation success (or until the Department finds that the  
13 landowner has converted the area to a use that is inconsistent with the success criteria) and the  
14 Department determines that the certificate holder has met its restoration obligations for that area.

15           The certificate holder shall provide the revegetation records described in Section 1 above  
16 and shall report on the progress of revegetation. The certificate holder may include the reporting  
17 on revegetation actions and progress in the annual report required under OAR 345-026-0080 or  
18 submit this information as a separate document at the same time the annual report is submitted.

### **19   V. Amendment of the Plan**

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