



Oregon

Kate Brown, Governor



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To: Energy Facility Siting Council
From: Duane Kilsdonk
Date: May 24, 2018
Re: Leaning Juniper IIA Wind Power Facility – Annual Monitoring for Wildlife Monitoring and Mitigation Plan
(Condition 87)

Leaning Juniper IIA Wind Power Facility is a wind energy generation facility consisting of 43 wind turbines, with a peak generating capacity of 90.3 megawatts (MW). The facility is located in Gilliam County. The Council issued a site certificate for the facility in 2007.

Condition 87 of the site certificate states that, “The certificate shall conduct wildlife monitoring as described in the Wildlife Monitoring and Mitigation Plan (WMMP) that is incorporated in the Final Order on Amendment #2 for LJF as Attachment D and as amended from time to time.”

The WMMP requires that the certificate holder implement the following components:

- 1) Fatality Monitoring Program
- 2) Raptor Nesting Surveys
- 3) Washington Ground Squirrel Surveys
- 4) Grassland Bird Study
- 5) Wildlife Monitoring and Reporting System

As noted by the certificate holder, the monitoring activities during 2017 for this facility include Washington ground squirrel surveys and the ongoing wildlife monitoring and reporting system. The Fatality Monitoring Program and Grassland Bird Study have been completed. Raptor nest surveys are long-term surveys required every 5-years, for the life of the facility; the next raptor next survey will be conducted in 2020. Washington ground squirrel surveys are long term surveys required every 3-years, for the life of the facility; the next survey will be conducted in 2020.

The Department received the annual monitoring results for the facility on April 25, 2018. Section 6 of the WMMP, Data Reporting, establishes an opportunity for the public to review and comment on monitoring results. Specifically the WMMP states, “The public will have an opportunity to receive information about monitoring results and to offer comment. Within 30 days after receiving the final versions of reports that are required under this plan, the Department will make the reports available to the public on its website and will specify a time in which the public may submit comments to the Department.”

In accordance with the terms of the WMMP, the Department provides a copy of the 2016 monitoring results for the Leaning Juniper IIA Wind Power Facility to the Council for review (attached) and posted a copy to the Department's project website at: <http://www.oregon.gov/energy/facilities-safety/facilities/Pages/LJA.aspx> and has established 30-day timeframe to accept public comments.

Comments are due within 30-days after the conclusion of the upcoming June 29th Energy Facility Siting Council meeting. Comments are due **July 29, 2018 at 5pm** and may be submitted to Duane Kilsdonk at duane.kilsdonk@oregon.gov

Attachments: Wildlife Monitoring and Mitigation Plan (November 6, 2015)
2016 Wildlife Monitoring Report

Leaning Juniper IIA and IIB Wind Projects: Ongoing Wildlife Monitoring and Mitigation Plan

NOVEMBER 6, 2015

1 This Ongoing Wildlife Monitoring and Mitigation Plan (the Plan) describes wildlife
2 monitoring that the certificate holders shall conduct during operation of the Leaning Juniper IIA
3 and IIB Wind Power Facilities. The ongoing monitoring objectives are to determine whether the
4 facility causes significant fatalities of birds and bats and to determine whether the facility results
5 in a loss of habitat quality.

6 Following Amendment 2 of the original Leaning Juniper II Wind Power Facility site
7 certificate, the single facility was divided into two separate facilities, with LJIIA and LJIIB each
8 receiving its own site certificate. However, the site certificate holders agreed to share mitigation
9 and environmental responsibilities. Therefore, the requirements for the facility as a whole,
10 including both LJIIA and LJIIB, remain in this Wildlife Monitoring and Mitigation Plan
11 (WMMP) and each individual site certificate holder remains bound by its terms.

12 Collectively, LJIIA and LJIIB ('the Facilities' or 'LJIIA/B') consists of 117 wind
13 turbines, four non-guyed meteorological (met) towers and other related or supporting facilities as
14 described in the site certificate. The permanent facility components occupy approximately 111
15 acres, of which up to 52 acres is Category 5 wildlife habitat or better, based on the Oregon
16 Department of Fish and Wildlife (ODFW) standards (OAR 635-415-0025).¹

17 Each certificate holder shall use experienced personnel to implement the ongoing
18 monitoring required under this plan and properly trained personnel to conduct the monitoring,
19 subject to approval by the Oregon Department of Energy (Department) as to professional
20 qualifications. For all components of this plan except the Wildlife Monitoring and Reporting
21 System (WMRS), each certificate holder shall hire an independent third party (not employees of
22 the certificate holder) to perform monitoring tasks.

23 The Wildlife Monitoring and Mitigation Plan for the Facilities originally included the
24 following components:

- 25 1) Fatality monitoring program including: (completed, Downes et al. 2013)
 - 26 a) Removal trials
 - 27 b) Searcher efficiency trials
 - 28 c) Fatality search protocol
 - 29 d) Statistical analysis
- 30 2) Raptor nesting surveys (ongoing)
- 31 3) Washington ground squirrel surveys (ongoing)
- 32 4) Grassland bird study (completed, Downes and Gritski 2014)
- 33 5) Wildlife Monitoring and Reporting System (ongoing)

¹ A more complete description of the habitat areas affected by the Facilities, LJIIA and LJIIB, is provided in the Final Order on Amendment #1, Section IV.4(b), which expanded the site boundary to include LJIIB.

Leaning Juniper IIA and IIB Wildlife Monitoring and Mitigation Plan

[NOVEMBER 6, 2015]

1 Since the original Wildlife Monitoring and Mitigation Plan was adopted on November
2 20, 2009 (and updated in June 21, 2013), the requirements of (1) and (4) and the initial
3 requirements of (2), (3), (5), and (6) above have been completed, as reflected and described in
4 this Plan. This Plan reflects the ongoing, long-term monitoring and mitigation requirements for
5 raptor nesting surveys (Section 2), Washington ground squirrel surveys (Section 3), and the
6 Wildlife Monitoring and Reporting System (Sections 5 and 6). Section 8, Literature Cited, was
7 added to provide references and sources for completed requirements of the Plan.

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

14 1. Fatality Monitoring

15 The certificate holders conducted two years of post-construction fatality monitoring
16 following substantial completion or commercial operations date (COD) of the Facilities
17 reflecting operating impacts on wildlife. The results of the post-construction fatality monitoring
18 are presented in Downes et al. (2013).

19 2. Raptor Nest Surveys

20 The objectives of raptor nest surveys are: (1) to estimate the size of the local breeding
21 populations of raptor species that nest on the ground or aboveground in trees or other
22 aboveground nest locations in the vicinity of the facility; and (2) to determine whether operation
23 of the facility results in a reduction of nesting activity or nesting success in the local populations
24 of the following raptor species: Swainson's hawk, golden eagle, ferruginous hawk and burrowing
25 owl. For each phase of LJIIA/B, the certificate holder conducted the first year of post-
26 construction raptor nest surveys in 2011 (Downes et al. 2012), the first raptor nesting season
27 after construction of that phase was completed. The second year of surveys was done in 2015
28 with results presented in Gerhardt and Kronner (2015). Hereafter, the certificate holders shall
29 conduct long-term raptor nest surveys as described below and summarized in Section 2(d). The
30 certificate holder will share the data with state and federal biologists

31 (a) Survey Protocol

- 32 • *For Raptor Species that Nest Aboveground*

33 During long-term survey years, each certificate holder shall use aerial and ground surveys
34 to evaluate nest success by gathering data on active nests, on nests with young and on young
35 fledged. Each certificate holder will conduct aerial surveys to determine nest occupancy in late
36 May or early June within the site and a 2-mile buffer around the site (as identified in Downes et
37 al., 2012, Leaning Juniper II Wildlife Monitoring Report for 2011–2012). Two helicopter visits
38 to each nest may be required to determine *occupancy*. These surveys may be coordinated with
39 adjacent wind facilities. All nests discovered during pre-construction surveys and any nests
40 discovered during post-construction surveys, whether active or inactive, will be given
41 identification numbers. Nest locations will be recorded on U.S. Geological Survey 7.5-minute
42 quadrangle maps. Global positioning system coordinates will be recorded for each nest.
43 Locations of inactive nests will be recorded because they could become occupied during future

Leaning Juniper IIA and IIB Wildlife Monitoring and Mitigation Plan

[NOVEMBER 6, 2015]

1 years. For occupied nests, the certificate holder shall determine nesting *success* by a minimum
2 of one ground visit to determine species, number of young and young fledged. “Nesting success”
3 means that the young have successfully fledged (reach advanced stage of development, the
4 young are capable of independent movements). Nests that cannot be monitored due to the
5 landowner denying aerial or ground access will be checked from a distance where feasible.

6 *For Burrowing Owls* The certificate holders monitored burrowing owl nests in 2011 and
7 in 2015 (Downes et al. 2012, Gerhardt and Kronner 2015). Hereafter, each certificate holder will
8 survey burrowing owl nest sites discovered during pre- and post-construction surveys (as
9 identified in Downes et al., 2012, Leaning Juniper II Wildlife Monitoring Report for 2011–2012)
10 as a part of the long-term raptor nest monitoring program described above and in Section 2(d).
11 Any nests discovered during future post-construction surveys, whether active or showing signs
12 of intermittent use by the species will be given identification numbers and monitored. Nest
13 locations will be recorded on U.S. Geological Survey 7.5-minute quadrangle maps. Global
14 positioning system coordinates will be recorded for each nest site. Coordinates for ancillary
15 burrows used by one nesting pair or a group of nesting pairs will also be recorded. Locations of
16 inactive nests will be recorded because they could become occupied during future years.

17 (b) Analysis

18 For each phase of the facility, the certificate holders analyzed the raptor nesting
19 data collected after two survey years to determine whether a reduction in either nesting success
20 or nest use has occurred in the vicinity of the facility (see Gerhardt and Kronner 2015).. The
21 number of nests and raptor species composition demonstrated natural variation within the typical
22 range of the various species, between 2011 and 2015. The Swainson’s hawk nesting density
23 continued to be high for a landscape dominated by natural habitats. Much of this variability can
24 be attributed to natural conditions associated with precipitation levels, available prey base (voles,
25 ground squirrels, and invertebrates), and interspecies (common raven) competition.

26 (c) Mitigation

27 The certificate holders shall propose mitigation for the affected species in consultation
28 with the Department and ODFW and shall implement mitigation as approved by the Council (see
29 Section 2(d)).

30 (d) Long-term Raptor Nest Monitoring and Mitigation Plan

31 In addition to the two years of post-construction raptor nest surveys described in Section
32 2(a), each certificate holder shall conduct long-term raptor nest surveys at five-year intervals for
33 the life of the facility.² The certificate holders shall conduct the first long-term raptor nest survey
34 in 2020. In conducting long-term surveys, the certificate holders shall follow the same survey
35 protocols as described above in Section 2(a) and in Gerhardt and Kronner (2015) unless the
36 certificate holders propose an alternative protocol that is approved by the Department. In
37 developing an alternative protocol, the certificate holders shall consult with ODFW.

38 Each certificate holder shall analyze the raptor nesting data collected after each year of
39 long-term raptor nest surveys to determine whether a reduction in either nesting success or nest
40 use has occurred in the vicinity of the facility. If the analysis indicates a reduction in nesting

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

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1 success or nest use by Swainson's hawks, golden eagles, ferruginous hawks or burrowing owls
2 within the facility site or within 2 miles of the facility site, then the certificate holders shall
3 propose appropriate mitigation for the affected species as described in Section 2(a) and shall
4 implement mitigation as approved by the Council. At a minimum, if the analysis shows that any
5 raptors of these species have abandoned a nest territory within the facility site or within ½ mile
6 of the facility site or has not fledged any young over the two survey years within that same area,
7 the certificate holders shall assume the abandonment or unsuccessful fledging is due to operation
8 of the facility unless another cause can be demonstrated convincingly.

9 Any reduction in nesting success or nest use could be due to operation of the facility,
10 operation of another wind facility in the vicinity or some other cause, including changes in land
11 use patterns after construction of the facility. The certificate holders shall attribute the reduction
12 to operation of LJIIA/B if the wind turbine closest to the affected nest site is an LJIIA/B turbine
13 unless the certificate holder demonstrates, and the Department agrees, that the reduction was due
14 to a different cause.

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

21 3. Washington Ground Squirrel Surveys

22 For the LJIIA/B area, the certificate holders conducted surveys in 2011, the year
23 following construction, and 2014 to collect data on Washington ground squirrel (WGS) activity
24 within the lease boundary (Downes et al. 2012, 2014). A qualified professional biologist
25 monitored the WGS sites in the facility identified during the pre-construction surveys (2005
26 through 2007) and the buffer area within 500 feet in all directions from the identified WGS sites
27 in suitable habitat. The sites include the historic areas at LJIIA/B (as identified in Downes et al.
28 2012). Overall, WGS are active in the area but have shifted areas of occupancy from pre-
29 construction boundaries.

30 Hereafter, the certificate holders shall conduct long-term WGS use surveys at LJII-A/B)
31 every three years for the life of the facility (2017, 2020, 2023...). Post-construction WGS
32 monitoring for the LJIIA/B areas will assess the status (occurrence) and use (extent) of
33 colonies. Surveyors will conduct standard recording protocols (level of use, notes on natal sites
34 and physical extent of the sites) during meandering pedestrian (40-60 m spacing) surveys of the
35 identified sites and suitable habitat within 500 ft. buffer twice between late March and late
36 May, during the active WGS periods. The biologist will also record incidental observations
37 (including mapping and dates of observation) during other survey activities on the facility
38 sites. These observations shall also include current land use and any land use or project-caused
39 conditions (erosion, declines in vegetation quality) that may adversely affect WGS sites. This
40 monitoring will be consistent with the Incidental Take Permit (ITP) application for LJIIA as set
41 forth in Attachment E of the Final Order on the Application. These surveys may be coordinated
42 with adjacent wind facilities to enhance data collection and analysis of WGS activity in the area.

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4. Grassland Bird Study

The grassland bird study was a 2-year, post-construction evaluation of grassland bird use in the Facility area. Parts of the Facility occupy native habitat suitable for various ground-nesting bird species that nest in grassland or open low shrub habitat. The objective of the post-construction grassland bird study is to determine if there are noticeable changes in the presence and overall use by special status grassland bird species compared to pre-construction data collected in 2006.

(a) Study Area

The study areas were located within the LJIIA/B area and covered approximately 1,362 acres.³ The study areas were selected because they are somewhat removed from human activity (except low traffic use on facility access roads and one county road) and contain a large area of grassland/shrub-steppe habitat (mapped as habitat sub-type “SSB”) that is not proposed to be altered during project construction or operations.

(b) Survey Protocol

The certificate holders conducted the first year of post-construction grassland surveys in 2011, the first spring following the beginning of commercial operation of the facility (Downes et al. 2012). The certificate holders conducted a second year of grassland surveys in 2014. Findings of the grassland bird study were presented Downes and Gritski (2014).

(c) Data Analysis and Reporting

After the first survey year (2011), the certificate holders submitted a preliminary summary report to the Department (Downes et al. 2012). After the second survey year (2014), the certificate holders submitted a more comprehensive final report (Downes and Gritski 2014). Overall, no noticeable change in presence and overall use by special status grassland birds was observed when compared to pre-construction findings.

5. Wildlife Monitoring and Reporting System

The Wildlife Monitoring and Reporting System (WMRS) is an on-going monitoring program to report avian and bat casualties found by maintenance personnel during operation of the facility. It consists of weekly Environmental Coordinator (EC) Inspections of selected turbines conducted during both spring and fall migration seasons, monthly SPCC Turbine Checks of every turbine, and Incidental Observations with discovery of bird and bat carcasses and injured wildlife incidental to operations and maintenance. The certificate holders’ maintenance personnel will be trained in the methods needed to carry out this program.

All avian and bat carcasses discovered by the certificate holders’ maintenance personnel will be reported to the on-site EC for same day data recording (species, location, date, conditions) and for photo documentation. This information will be processed within WRMS and reviewed by the certificate holders biologists for confirmation of information and identification. If the carcass is suspected to be an eagle or a state or federally- listed endangered or threatened

⁴The certificate holders may establish a Technical Advisor Committee (TAC) but are not required to do so. If the certificate holders establish a TAC, the TAC may offer comments to the Council about the results of the monitoring required under this plan.

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1 species, the certificate holders will contact ODFW and US Fish and Wildlife Service (USFWS)
2 to report and coordinate collection. The certificate holder will secure the carcass (e.g., cover with
3 a container) until, if appropriate, collection is completed. The certificate holders will not handle
4 or transport any bat or bat carcass without a state or federal scientific collection or special use
5 permit (SPUT).

6 **6. Data Reporting**

7 Each certificate holder will report wildlife monitoring data and analysis to the
8 Department. Monitoring data include fatality monitoring program data; raptor nest survey data;
9 WGS survey data, incidental observation, and assessment reports; grassland bird study data; and
10 WMRS (specifically eagles or state and federally-listed endangered or threatened species) data.
11 The certificate holders may include the reporting of wildlife monitoring data and analysis in the
12 annual report required under OAR 345-026-0080 or submit this information as a separate
13 document at the same time the annual report is submitted. In addition, the certificate holder shall
14 provide to the Department any data or record generated in carrying out this monitoring plan upon
15 request by the Department.

16 The certificate holders shall notify USFWS and ODFW immediately if any federal or
17 state endangered or threatened species are killed or injured on the facility site.

18 The public will have an opportunity to receive information about monitoring results and
19 to offer comment. Within 30 days after receiving the final versions of reports that are required
20 under this plan, the Department will make the reports available to the public on its website and
21 will specify a time in which the public may submit comments to the Department.⁴

22 **7. Amendment of the Plan**

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

30 **8. Literature Cited (Documents cited are available on the Oregon Department of Energy** 31 **web site)**

32 Downes, S., B. Gritski, B. Anderson, and S. Zielin. 2012. Leaning Juniper II Wind Power
33 Facility Wildlife Monitoring Study Annual Report, March 2011—July 2012. Prepared for
34 Leaning Juniper II, LLC, Portland, Oregon. Prepared by Northwest Wildlife Consultants,
35 Inc. dated October 23, 2012.

36 Downes, S., B. Gritski, and S. Woods. 2013. Leaning Juniper II Wind Power Facility Wildlife
37 Fatality Monitoring Study January 2011-July 2013. Prepared for Iberdrola Renewables,
38 Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon
39 dated November 27, 2013.

⁴The certificate holders may establish a Technical Advisor Committee (TAC) but are not required to do so. If the certificate holders establish a TAC, the TAC may offer comments to the Council about the results of the monitoring required under this plan.

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- 1 Downes, S. and B. Gritski. 2014. Leaning Juniper II Wind Power Facility 2014 Wildlife
2 Monitoring. Prepared for Iberdrola Renewables, Portland, Oregon. Prepared by
3 Northwest Wildlife Consultants, Inc., Pendleton, Oregon dated December 8, 2014.
- 4 Gerhardt R. and K. Kronner. 2015. Leaning Juniper II Wind Power Facility Raptor Nest
5 Survey 2015. Report prepared by Northwest Wildlife Consultants, Inc. dated September
6 15, 2015 Leaning Juniper Wind Power II (LJWPPII), LLC. 2013. Leaning Juniper IIA and
7 IIB Wind Project: Wildlife Monitoring and Mitigation Plan. June 21, 2013. Oregon
8 Energy Facility Siting Council of the State of Oregon, Final Order on Amendment #2-
9 Attachment D. Second Amended Site Certificate for the Leaning Juniper II Wind Power
10 Facility

**Leaning Juniper II Wind Power Facility
2017 Washington Ground Squirrel Monitoring**



Prepared for:

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September 18, 2017

Executive Summary

The Leaning Juniper II Wind Power Facility is located south of Arlington in Gilliam County, Oregon and is owned and operated by Leaning Juniper Wind Power II, LLC, which is owned by Avangrid Renewables, LLC (previously Iberdrola Renewables, LLC). Commercial operations began in June 2011. The Project is comprised of two areas, referred to as Leaning Juniper IIA and IIB. The 2009 Amended Leaning Juniper Wind Facility Site Certificate contains a study plan for operations phase wildlife monitoring (Wildlife Monitoring and Mitigation Plan). That plan was amended November 6, 2015, and calls for Washington ground squirrel monitoring in 2017 and every three years subsequently for the life of the Project (EFSC, 2015). This report summarizes methods and results from 2017 Washington ground squirrel monitoring conducted by Northwest Wildlife Consultants, Inc. on Leaning Juniper IIA and IIB.

General habitat types present within the Project boundary are agricultural (non-irrigated farmland used for small grain crop production every other year), non-agricultural but developed areas and features (landfill, gravel quarry, roads, wind project facilities) and undeveloped (shrub-steppe, native perennial grassland, non-native annual grassland and revegetated grassland). Areas monitored for Washington ground squirrels are in shrub-steppe, native perennial grassland, non-native annual grassland and revegetated grassland within the Leaning Juniper II Project boundary.

The primary objective of the post-construction monitoring of Washington ground squirrels on Leaning Juniper IIA, as stated in Attachment 2 of the Incidental Take Permit (LJWPPII, 2007b), was to determine the current status of the pre-construction baseline sites. The nine baseline sites described in the ITP application are areas of historical Washington ground squirrel use, 2005–2007. The life-of-project monitoring area includes the historical area of use boundary plus a 500-foot buffer in suitable habitat within the Project boundary. These were monitored for WGS occupancy and level of use twice in 2017, once during April and once during May. Methods matched those defined in the ITP and in 2011 and 2014, the previous years of reporting on these areas of use (Downes et al., 2012; Downes and Gritski, 2014). Monitoring also included an assessment of the current land use and habitat quality. None of the monitored areas showed signs of 2017 WGS occupancy. Based on Northwest Wildlife Consultant's experience onsite with Washington ground squirrel studies since 2003, and most recently in habitat adjacent to Leaning Juniper IIA in 2016 (Gerhardt and Kronner, confidential report, 2016), continuing encroachment by exotic grasses and weeds may be rendering some of these areas less suitable for ground squirrel occupancy. No change in land use within the monitored areas since 2014 was noted.

The Leaning Juniper IIB monitoring area is defined as the historical area of use and, starting in 2017, includes a 500-foot buffer of the historical sites in suitable habitat within the Project boundary. The buffering of ten historical use sites yielded six distinct survey areas. Monitoring also includes an assessment of the current land use and habitat quality. Suitable habitat was surveyed twice during 2017, once in April and once in May. Some significant land use changes have occurred between early 2015 and early 2017. At four of the six survey areas conversion to agriculture has left very little (two areas) or no (two areas) suitable WGS habitat but were assessed for suitability and where suitable, surveyed twice. No WGS or sign of use was found. At the other two survey areas (one incorporating historical use sites 16 and 17 and the other incorporating historical use sites 22a and b and 24), WGS occupancy persisted in 2017.

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1.0 INTRODUCTION

This report presents results of the Washington ground squirrel (WGS, *Urocitellus washingtoni*) monitoring conducted in 2017 at Leaning Juniper IIA and IIB. This monitoring was implemented in compliance with the Wildlife Monitoring and Mitigation Plan (WMMP, Nov 20, 2009, amended WMMP, November 6, 2015) to conform to Permit Conditions #87 and #88 of the Final Order of the Site Certificate (LJWPPII, 2009a). The species current status in Oregon is Oregon State Endangered and federal Species of Concern (ORBIC, 2016 and USFWS, 2016).

The Leaning Juniper II Wind Power Facility (LJF; also referred to as the "Project" in this report) is owned and operated by Leaning Juniper Wind Power II, LLC (LJWPPII) which is owned by Avangrid Renewables, LLC (previously Iberdrola Renewables, LLC). A permit ("Site Certificate") for construction and operations was issued to LJWPPII by the Oregon Energy Facility Siting Council in 2007 (LJWPPII, 2007a) and an Amended Site Certificate was issued in 2009 (LJWPPII, 2009a). The Final Order of the Site Certificate contains Permit Conditions for the pre-construction, construction and post-construction phases. Conditions #87 and #88 specify wildlife monitoring and refer to a study plan for the operations phase wildlife monitoring (Wildlife Monitoring and Mitigation Plan, WMMP). The WMMP was amended November 6, 2015, and calls for Washington ground squirrel monitoring in 2017 and every three years subsequently for the life of the Project (EFSC, 2015).

The Project is located south of Arlington, Gilliam County, Oregon. Commercial operations began in June 2011. The Project consists of 117 wind turbines, three non-guyed meteorological (met) towers and other related or supporting facilities as described in the Site Certificate. The Project consists of two areas, referred to as Leaning Juniper IIA and IIB. Leaning Juniper IIA has 43 Suzlon S88 2.1-megawatt (MW) turbines for an installed capacity of 90.3 MW. Leaning Juniper IIB has 74 GE 1.5-MW sle turbines for an installed capacity of 111 MW. Combined, the Project has an installed capacity of 201.3 megawatts. Substantial construction completion of Leaning Juniper IIA facilities occurred by October 20, 2010 and IIB facilities were completed on December 20, 2010. Commercial operation of the full Project started on June 9, 2011.

General land cover/habitat types present within the Project boundary (also referred to as the Facility boundary) continue to be agricultural (non-irrigated farmland used for small grain crop production every other year), non-agricultural but developed areas and features (landfill, gravel quarry, roads, wind project facilities) and undeveloped (shrub-steppe, native perennial grassland, non-native annual grassland and revegetated grassland). Some of the revegetated grassland (prior farmland) may be enrolled in the federal Conservation Reserve Program (CRP). Scattered juniper trees and rock outcrops are also present. Areas monitored for Washington ground squirrels are in shrub-steppe, native perennial grassland, non-native annual grassland and revegetated grassland.

Within the northern portion of the Facility boundary, snakeweed (*Gutierrezia sarothrae*) is the dominant shrub where antelope bitterbrush (*Purshia tridentata*) is not present. Various perennial grasses and forbs along with some non-native grasses and forbs such as cheatgrass (*Bromus tectorum*) and tall tumbled mustard (*Sisymbrium altissimum*) are present. Cheatgrass varies from being a small grass component in some areas to being the dominant grass species in other areas. Some remnants of big sage (*Artemisia tridentata*) are found throughout the northern area. Gray rabbitbrush (*Ericameria nauseosa*) is also present in some areas along with scattered medium to large sized western junipers (*Juniperus occidentalis*).

Within the southern portion of the Facility boundary, the dominant shrub is also snakeweed, with scattered gray rabbitbrush and the occasional big sage also present. Native perennial grasses are present along with non-native cheatgrass. Cheatgrass is a secondary grass component in some areas while being the dominant grass species in other areas. Within the Facility boundary, some of the lowest densities of cheatgrass are within the revegetation areas around the turbine pads and roads.

For the IIA portion of the Project, long-term intensive post-construction monitoring is required under the Washington Ground Squirrel Incidental Take Permit (ITP) issued as Attachment E to the Final Order on the Project Application (LJWPPII, 2007b). To comply with Condition #88 a concurrence letter for the 2007 ITP application was issued to LJWPPII by the Oregon Department of Fish and Wildlife in June 2008. For the IIB portion of the Project, no ITP was issued. The primary objective of the post-construction monitoring as stated in Attachment 2 of the LJII-A ITP (LJWPPII, 2007b) is to determine the current status of the pre-construction baseline sites. The 2015 amended WMMP specifies an additional 500 feet around the IIB sites be monitored starting in 2017 and for the future outyear monitoring. In addition, it specifies that IIA and IIB will be monitored in the same years.

Washington ground squirrel surveys (monitoring of prior recorded sites) were to be conducted during the first year following construction. The surveys were initiated in March 2011 and repeated in 2014, three years post-construction. As specified in the 2009 WMMP, the historical areas on IIA were to be monitored during the year following construction and every three years thereafter for the life of the facility. At IIB, the WGS activity assessments at specific areas were to occur during the WGS active period in the first and fourth years of operation and every five years thereafter for the life of the Project. The 2015 WMMP specifies IIA and IIB be monitored in the same year every three years for the life of the Project and an additional 500 feet around the IIB sites be included in the monitoring for consistency with IIA methods.

2.0 METHODS

Washington ground squirrel (WGS) monitoring in 2017 at Leaning Juniper II Wind Power Facility consists of monitoring specific areas of use (sites or colonies and associated buffers) on the IIA and IIB portions of the Project (Figures 1, 2 and 3). Consistent with prior monitoring, biologists determined the current habitat suitability for WGS and recorded land use activity along with any evidence of Project-related conditions that might increase erosion or result in a decline in vegetation quality, thus adversely affecting a WGS colony or its activity (LJWPPII, 2009b and EFSC, 2015).

The following describes survey methods used at IIA and IIB in each monitoring year. Biologists looked and listened for WGS and surveyed for active holes and potential natal burrows, recording the locations of these using a handheld GPS receiver. They also documented habitat changes and areas of erosion as specified in the WMMP. All detections were subsequently entered into a Geographic Information System (GIS). Washington ground squirrel areas of use were delineated and assigned a level of use according to the following classification system that was also used by NWC for the pre-construction studies: very low use = less than one active hole per hectare, low use = 1–5 active holes per hectare, medium = 5–25 active holes per hectare, or high = 25 or more active holes, very high = 250 or more active holes per hectare. Detections were recorded for active holes at least 15 meters from other active holes and each detection included notes on how many active holes were within 15 meters of the detection. If multiple detections were recorded for an area of use, a delineated boundary was drawn in GIS. In delineating areas of use in GIS, a buffer of 15 meters was placed on the outside of the outer detections to be consistent with the methods used for recording detections during pre-construction field surveys. If any

WGS were documented while in transit to and from the survey areas, they were recorded and mapped in GIS.

2.1 Leaning Juniper IIA

Intensive monitoring for Washington ground squirrels on the IIA portion of the Project consisted of a biologist monitoring a survey area defined in the ITP as sites identified during the pre-construction surveys (2005 through 2007) and the buffer area within 500 feet in all directions from the identified WGS sites in suitable habitat (Figures 1 and 2). The survey areas were only within the IIA Project boundary and in areas where suitable habitat had not been permanently altered by spring 2017 (Figure 2). Habitat within portions of WGS 4c area of use (the historically active area of use) and the 500-foot survey buffer assigned to the site were permanently converted to commercial use by the landowner after the initial 2005 WGS surveys were conducted (Downes et al., 2012). Because the habitat was no longer suitable for WGS, these areas were not surveyed in 2011, 2014, or 2017. The 2017 survey areas are identical to those surveyed in 2011 (Downes et al., 2012) and 2014 (Downes and Gritski, 2014).

The term “area of use” for IIA is defined as the delineated area that Washington ground squirrels were determined to be using during the pre-construction surveys. WGS areas of use and their associated 500-foot survey buffers inside the Leaning Juniper IIA boundary that were surveyed during 2011, 2014, and 2017 surveys were those listed in the ITP (LJWP II, 2007b). They are: 1, 4a, 4b, 4c, 4d, 4e, 5, 6, and 8 (Figures 1 and 2). The experienced biologist walked the survey areas twice during the spring of 2017. The first survey occurred March 12 and 17, a time at which adults are expected to be active but before most juvenile squirrels would have emerged aboveground. The second survey occurred May 17 and 18, during the typical peak WGS activity. The biologist walked transects spaced at 30–50 meters apart, as specified in the ITP. Transect widths were consistent with survey efforts during 2011 surveys (Downes et al., 2012) and 2014 surveys (Downes and Gritski, 2014).

2.2 Leaning Juniper IIB

Monitoring at IIB included ten pre-construction Washington ground squirrel areas of use—13, 14, 15a, 15b, 16, 17, 22a, 22b, 23, and 24. In 2017 (though not in prior years), these were buffered by 500 feet. This resulted in six distinct survey areas (Figure 3), each of which encompassed one, two or three historical areas of use. At four of the six survey areas conversion to agriculture has left very little (two areas) or no (two areas) suitable WGS habitat but were fully assessed for suitability and where suitable, were surveyed for sign of use twice. Surveys were surveyed on April 19 and again on May 22, 2017. Survey methods were the same as those described above for Leaning Juniper IIA.

3.0 RESULTS

3.1 Land Use Changes 2017 compared to 2014, Erosion, and Grazing

As in prior survey years, cattle were grazed on most WGS areas of historical use at IIA and IIB (at least where grassland was still present). Within the monitored areas no evidence of erosion resulting from Project related activities was noted at either Project during 2017 surveys. Some significant land use changes had occurred at IIB since the last monitoring, however; these are described below.

3.2 Intransit Observations

No WGS were observed while travelling onsite between surveys areas.

3.3 Leaning Juniper IIA WGS and Habitat

No WGS activity was detected in 2017 at any of the nine Leaning Juniper IIA survey areas (Figure 2, Table 1). However, because portions of the habitat remaining in 2017 at the original 2005 WGS areas 1, 4d, 4e and 5 lie outside of the Project's leased land boundary (Figure 1), it cannot be determined if the entire 2005 WGS four areas of use were devoid of use during 2017. In general, LJ-IIA survey areas previously occupied by WGS have seen an increase in vegetative density over the years (Figure 4); this likely makes these areas less suitable for occupancy by WGS (see discussion below).

3.4 Leaning Juniper IIB WGS and Habitat

Ten WGS areas of use are specified in the WMMP (LJWP II, 2009b and the 2015 WMMP) for post-construction monitoring and assessments; these are 13, 14, 15a, 15b, 16, 17, 22a, 22b, 23 and 24 (Figure 3). Starting in 2017, a buffer of 500 feet was established around each of these; this yielded six distinct survey areas (Figure 3), each of which encompassed one (13, 14 and 23), two (15a, 15b, 16, 17), or three (22a, 22b, 24) areas of use that were previously monitored. All suitable habitat within the resulting perimeters was surveyed (Figure 3).

At four of the six 2017 survey areas, recent land use changes (plowing, tilling to convert to agricultural use within the original sites as well as the added buffers) rendered most (in two cases) or all (in two cases) of the 2017 survey area land unsuitable for supporting WGS. At the two more easterly survey areas (those associated with sites 16 and 17 and with sites 22a, 22b, and 24), the habitat within the original previously-monitored areas remained suitable for WGS (Figure 4) and continued occupancy by this species was documented (Table 2).

Of the 10 areas specified in the WMMP, two (17 and 22b) had 2017 WGS activity within the historical area of use, and three others (16, 22a, and 24) had no WGS at the historical area of use but did have WGS activity within the 500-foot buffer additional survey area of the historical area of use (Table 2). At these two survey areas, the majority of the land encompassed by the added 500-foot buffer constitutes suitable WGS habitat (Figure 3).

4.0 DISCUSSION

4.1 Leaning Juniper IIA

Neither individuals nor colonies of ground squirrels of the genus *Urocitellus* are completely sedentary year to year, and the absence of WGS from areas they occupied as far back as a decade ago is not unexpected. Nonetheless, habitat alterations and land use and changes in vegetation characteristics may preclude the future suitability of areas that previously supported this species, as at Leaning Juniper IIA in the past ten years. In regards to non-use in 2017, this WGS breeding season followed a winter and spring of higher than normal precipitation, and native and non-native grasses were abundant, dense and tall during the survey period. Whereas WGS prefer areas of native grass and forb species that include patches of low vegetation and bare ground (Carlson et al., 1980), the presence and density of cheatgrass, tarweed, and tumble mustard (Figure 4) likely leads to the avoidance by squirrels of otherwise suitable (and previously occupied) soils. Further monitoring of these areas will occur every three years, as specified in the ITP, with the next monitoring scheduled for spring of 2020.

4.2 Leaning Juniper IIB

Monitoring in 2017 of the ten sites active during pre-construction surveys and described in the WMMP yielded mixed results. For four of six 2017 survey areas—and five of the ten

originally monitored WGS use areas—recent land use changes have rendered the areas unsuitable for supporting WGS. For the other two 2017 survey areas (encompassing five originally monitored WGS use areas), land use was unchanged within the originally monitored areas. As of the last field survey day (May 22, 2017) habitat in these two survey areas has persisted as mostly healthy native grassland and shrub-steppe. WGS were detected in both of these survey areas, at or very near two of the historical use areas, and within 500 feet of the other three historical use areas. As specified in the WMMP (LJWP II, 2009b) amended November 6, 2015 (EFSC, 2015), assessment of the 10 WGS areas and associated 500-foot buffers will occur during the active WGS periods every three years for the life of the Project. Habitat in areas that were known in 2017 as having been rendered useless for supporting WGS will be checked in the next survey year to confirm current land alterations and lack of habitat suitability and to delineate the current suitability. The next monitoring is scheduled for spring of 2020.

5.0 ACKNOWLEDGEMENTS

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7.0 TABLES

Table 1. 2017 Washington ground squirrel (WGS) monitoring at the Leaning Juniper IIA Wind Power Facility and previous WGS level of use within the 2017 surveyed areas.

WGS Area of Use	2017 Level of Use	2014 Level of Use¹	2011 Level of Use²	2010 Level of Use³	2007 Level of Use⁴	2005 Level of Use⁴
1	Absent	Absent	Absent	Low	High	High
4a	Absent	Absent	Absent	Absent	Low	Low
4b	Absent	Absent	Absent	Absent	Low	Medium
4c	Absent	Absent	Absent	Low	High	High
4d	Absent	Absent	Absent	Absent	Medium	High
4e	Absent	Absent	Absent	Absent	Medium	High
5	Absent	Absent	Absent	Absent	Absent	High
6	Absent	Very Low	High	High	Medium	Very Low
8 ⁵	Absent	Absent	Absent	Not Surveyed	Not Surveyed	Not Surveyed

Level of Use definitions: Absent = no active holes detected during either survey, Very Low = less than 1 active hole per hectare, Low = 1–5 active holes/hectare, Medium = 5–25 active holes/hectare, High = 25 or more active holes/hectare.

¹ Information from Downes and Gritski, 2014

² Information from Downes et al., 2012

³ Information from Gritski, 2010

⁴ Information from Gritski et al., 2008

⁵ From ITP application (LJWP II, 2007b) Figure 1 (Q-1) dated July 11, 2007 and Figure 2 (Q-6) dated September 15, 2006. Not surveyed from mid-March–end of May. Was likely active in 2005, judging by sign of use noted in December 2005. Heard and saw two or three Washington ground squirrel on February 16, 2006. No indication of natal activity (female with young).

Table 2. 2017 Washington ground squirrel (WGS) monitoring at the Leaning Juniper IIB Wind Power Facility.

WGS Area of Use¹	2017 Status²	2014 Status²	2011 Status²
13	Little Habitat	Absent	Absent
14	No Habitat	Absent	Present
15a	Little Habitat	Present	Absent
15b	Little Habitat	Present	Absent
16	Present within 500ft	Present	Absent
17	Present	Present	Present
22a	Present within 500ft	Present	Absent
22b	Present	Present	Absent
23	No Habitat	Absent	Absent
24	Present within 500ft	Present	Absent

¹ In 2017 habitat within an additional 500 feet around each area was field assessed for suitability and if suitable, was also surveyed.

² Absent = no active holes detected during either survey (but suitable habitat persists);

Present = at least one active hole found at or very near area of historical use;

Present within 500 feet = no holes present at area of historical use but at least one active hole within 500 feet;

Little Habitat = Conversion to agriculture has resulted in no suitable habitat at area of historical use but some remaining within 500 feet; survey conducted in suitable.

No Habitat = Tilling, plowing for agriculture use has resulted in no suitable habitat within the historical monitored areas as well as within the additional 500 feet added in 2017; assessed but not surveyed.

7.0 FIGURES

Figure 1. Leaning Juniper IIA Wind Power Facility Washington ground squirrel monitoring areas and results for 2011 and 2014.

(Confidential - submitted under separate cover, previously submitted with the 2014 report)

Figure 2. Leaning Juniper IIA Wind Power Facility 2017 Washington ground squirrel monitoring areas.

(Confidential - submitted under separate cover)

Figure 3. Leaning Juniper IIB Wind Power Facility 2017 Washington ground squirrel monitoring areas.

(Confidential - submitted under separate cover)

Figure 4. Absence of Washington ground squirrels at Leaning Juniper IIA survey area 4b is likely associated with increasing density of exotic cheatgrass, tarweed, and tumble mustard.



Figure 5. Habitat occupied by Washington ground squirrels at Leaning Juniper IIB Wind Power Facility in spring of 2017.

