

**Echanis Transmission Line (West Alternate)
2009 Aerial Raptor Nest Survey
Harney County, Oregon**

Prepared for:

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Table of Contents

| | | |
|-----|------------------------|---|
| 1.0 | INTRODUCTION..... | 1 |
| 2.0 | METHODS | 1 |
| 3.0 | RESULTS..... | 2 |
| 4.0 | DISCUSSION | 2 |
| 5.0 | REFERENCES | 4 |
| 6.0 | ACKNOWLEDGEMENTS | 6 |
| 7.0 | FIGURES..... | 7 |

Tables

Table 1. Estimated raptor nest densities from West Alternate Echanis Transmission Line and proposed and existing Pacific Northwest wind projects..... 3

Figures

Figure 1. West Alternate Echanis Transmission Line Raptor and Other Large Bird Nests.....7

Echanis Transmission Line (West Alternate) 2009 Aerial Raptor Nest Survey

1.0 INTRODUCTION

Northwest Wildlife Consultants, Inc. (NWC) based in Pendleton, Oregon was contracted by Columbia Energy Partners, LLC (CEP) to conduct an aerial raptor nest survey on and near their proposed transmission line (west alternate) for the Echanis Wind Energy Project (Project). This report summarizes the methods and results of that survey. The Project and transmission line are located on the northern end of the Steens Mountains in Harney County, Oregon. A similar raptor nest survey for the north alternate transmission line is planned for spring season 2010. Related habitat mapping (Gerhardt and Luginbuhl, 2010), special status wildlife species survey (Gerhardt et al., 2009), special status plant species survey (Gerhardt et al., 2010), and avian use survey are or will be summarized in separate reports.

2.0 METHODS

The objective of the raptor nest survey was to obtain information that will help predict potential impacts of the Project to nesting raptors and for micro-siting project facilities during the planning stage to minimize potential direct and indirect impacts. Potential impacts include those that might occur during construction or operation of the Project and might involve disturbance during nesting, direct loss of nest structure, or death of nesting birds or fledglings through collision with transmission lines. Information gained from this study is expected to be useful for avoiding, minimizing and/or mitigating impacts.

One aerial survey of the area was conducted over three separate days (May 27, 28 and 29, 2009) via helicopter, using an experienced raptor ecologist and a helicopter pilot skilled at this type of survey. The surveyor identified all raptor and raven nests, both active and inactive, on the Project area and within a one-mile buffer of the transmission line (Figure 1). Raptors not included in this survey method were the ground-nesting owls and northern harrier (*Circus cyaneus*) and small cavity-nesters like American kestrel (*Falco sparverius*) due to the difficulty in detecting these types of nests during a helicopter survey. Within the survey area, all potential nesting areas—trees, existing transmission lines, and rock formations—were examined.

The locations of all large bird nests detected were recorded with a hand-held Global Positioning System (GPS) unit (Figure 1). This included all confirmed and potential raptor nests regardless of their activity status. To determine whether a nest was active or inactive, the biologist relied on clues that included behavior of adults and presence of eggs, young, or whitewash. Attempts were made to identify the species of raptor associated with each active nest. If detected, stick nests built by common ravens (*Corvus corax*) or black-billed magpies (*Pica hudsonia*) were also recorded, since some of these could be used by raptors in subsequent breeding seasons.

The number of active nests detected was divided by the area surveyed to obtain raptor nest densities, both by species and for all large diurnal raptors combined. These densities allowed for comparison with wind energy projects in the Pacific Northwest for which similar data were available.

3.0 RESULTS

The aerial raptor nest survey covered an area of approximately 52.7 square miles. Six active raptor nests, five active common raven nests, and 13 inactive stick nests were found, including:

- 2 red-tailed hawk (*Buteo jamaicensis*)
- 1 Swainson's hawk (*B. swainsoni*)
- 2 prairie falcon (*Falco mexicanus*)
- 1 turkey vulture (*Cathartes aura*)
- 5 common raven (*Corvus corax*)
- 13 inactive stick nests (4 large-sized)

Four of the inactive stick nests were large enough to have been built by golden eagles (*Aquila chrysaetos*).

A single nest of a special status raptor was found, that of State Sensitive-Vulnerable Swainson's hawk. Special status species are species listed as Federal or State Endangered or Threatened, Candidate, Federal Species of Concern and Oregon Sensitive status (summarized in Gerhardt and Gritski, 2009; ODFW, 2008).

Overall raptor nest density within the 2009 survey area was 0.09 nests per square mile (red-tailed hawk 0.038/mi², Swainson's hawk 0.019/mi², prairie falcon 0.038/mi²; Table 1). Although a turkey vulture nest (nest density 0.019/mi²) was found during this aerial survey, in general nests of this species, as well as burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), and American kestrel, are difficult to find using the aerial survey method without extensive on-the-ground surveys. Therefore, for comparison with other sites, nest density of turkey vulture is not included in the total nest density or in Table 1. Nest density estimates also do not include common raven or inactive nests.

4.0 DISCUSSION

Overall raptor nest density within the 2009 survey area for the West Alternate Echanis Transmission Line (transmission line plus a 2-mile buffer) was 0.09/mi² (not including turkey vulture, 0.019/mi², for purposes of comparison). This is at the lower end of nest densities documented at 18 wind projects in the Pacific Northwest (average 0.29/mi²; Table 1).

Impacts to nesting raptors from transmission lines are different, and presumed to be less, than impacts of wind turbines. Raptors use transmission towers as perches and nest platforms, and much effort has gone toward improving the design of transmission lines to avoid the risk of raptor collision or electrocution (APLIC, 2006). Nonetheless, raptors have been known to collide with transmission lines. The design of this proposed transmission line calls for spacing of conductors that will be sufficient to preclude electrocution of even the largest raptors. It is anticipated that the proposed line will utilize spinning flashers or other devices to minimize the risk of raptor collisions. It is also expected that micro-siting of the transmission line towers will take into account the location of raptor nests and that construction near nests will occur outside the raptor breeding season. In 2009, one of the active prairie falcon nests and one of the active common raven nests found during the raptor nest survey were located directly under the proposed transmission line.

General raptor use of particular parts of the proposed transmission line is being assessed as part of an avian use study still being conducted. Further assessment of impacts to raptors from the Project will be included in the discussion section of the avian use study report.

Table 1. Estimated raptor nest densities from West Alternate Echanis Transmission Line and proposed and existing Pacific Northwest wind projects.

| Project Site* | Raptor Nest Density (#/mi ²), rounded | | | | | | | |
|--|---|--------|------|------|------|-------|--------|------|
| | All Raptor Species Combined | Buteos | | | | Eagle | Falcon | Owl |
| | | SWHA | RTHA | FEHA | UNBU | GOEA | PRFA | GHOW |
| Echanis T-Line, OR | 0.09 | 0.02 | 0.04 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |
| Willow Creek Winds, OR | 0.80 | 0.44 | 0.07 | 0.25 | 0.00 | 0.00 | 0.00 | 0.04 |
| Rattlesnake Road, OR | 0.45 | 0.19 | 0.13 | 0.05 | 0.00 | 0.00 | 0.08 | 0.00 |
| Hopkins Ridge, WA | 0.42 | 0.01 | 0.27 | 0.01 | 0.05 | 0.00 | 0.00 | 0.08 |
| Leaning Juniper I and II, OR | 0.41 | 0.18 | 0.16 | 0.03 | 0.00 | 0.00 | 0.02 | 0.02 |
| Leaning Juniper IIB, OR | 0.40 | 0.19 | 0.13 | 0.06 | 0.00 | 0.00 | 0.02 | 0.00 |
| Harvest Wind-East, WA | 0.40 | 0.12 | 0.25 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
| Harvest Wind-West, WA | 0.28 | 0.00 | 0.19 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
| Wheat Field, OR | 0.26 | 0.06 | 0.12 | 0.03 | 0.00 | 0.00 | 0.06 | 0.00 |
| Golden Hills, OR | 0.25 | 0.04 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 |
| Pebble Springs, OR | 0.24 (2009 Project area only) | 0.18 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Klondike I and II, OR | 0.23 (5 mile radius survey area) | 0.07 | 0.11 | 0.00 | 0.00 | 0.01 | 0.00 | 0.04 |
| Stateline OR/WA | 0.21 | 0.03 | 0.08 | 0.03 | 0.00 | 0.00 | 0.00 | 0.07 |
| Klondike III, OR | 0.20 | 0.04 | 0.11 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 |
| Hay Canyon, OR | 0.18 | 0.02 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Wild Horse, WA | 0.16 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.02 | 0.02 |
| Klickitat County, WA | 0.12 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.01 | 0.03 |
| Big Horn, WA | 0.11 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.01 | 0.04 |
| Star Point, OR | 0.09 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average of Other Projects (not including Echanis T-line) | 0.29 | | | | | | | |

Species Codes:

SWHA = Swainson's hawk

RTHA = red-tailed hawk

FEHA = ferruginous hawk

GOEA = golden eagle

PRFA = prairie falcon

GHOW = great-horned owl

UNBU = unknown species of the genus *Buteo*

American kestrel, short-eared owl, long-eared owl, turkey vulture, and burrowing owl are omitted for purposes of comparison due to general difficulty in determining nesting of these species with the raptor nest survey method (helicopter survey) employed in this and other studies.

*References for projects: Big Horn (Johnson and Erickson, 2004), Golden Hills (Jeffrey et al., 2008), Harvest Wind East and West (Kronner et al., 2008a), Hay Canyon (formerly Grass Valley; Gritski et al., 2007), Hopkins Ridge (Young et al., 2003), Klickitat County (Johnson et al., 2003), Klondike I and II (Johnson et al., 2002), Klondike III (Mabee et al., 2005), Leaning Juniper I and II (Kronner et al., 2005), Leaning Juniper IIB (NWC, 2009), Pebble Springs (post-construction study, Gritski et al., 2009), Rattlesnake Road (Kronner et al., 2007a), Star Point (NWC, 2008), Stateline (Erickson et al., 2004; NWC and WEST, 2001), Wheat Field (Kronner et al., 2008b), Wild Horse (Erickson et al., 2003a), Willow Creek Winds (Kronner et al., 2007b).

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7.0 FIGURES

