

# Executive Summary

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This Executive Summary provides a synopsis of the North Steens 230-kV Transmission Line Project Final Environmental Impact Statement (Final EIS). The Final EIS describes the Proposed Action, alternatives to the Proposed Action (including a Preferred Alternative), and discusses the potential effects of the Proposed Action and Alternatives on elements of the environment. The Final EIS has been distributed to interested persons in hard copy and compact disk (CD) format, and hard copies are available for review at the BLM Burns District Office, local libraries, and other locations as specified in Section 4.0.

## INTRODUCTION

In December 2008, Harney Electric Cooperative (HEC) filed a preliminary application for right-of-way (ROW) with the U.S. Department of Interior Bureau of Land Management (BLM), Burns District Office, for the construction, operation, and maintenance of a new double-circuit 230,000 volt (230-kilovolts or 230-kV) overhead electric transmission line and associated facilities on BLM-administered land in Harney County, southeastern Oregon. The proposed transmission line, known as the North Steens 230-kV Transmission Line Project, would transport electrical power generated at the Echanis Wind Energy Project to HEC's existing electrical transmission grid.

The Echanis Wind Energy Project (Echanis Project) is a 104-megawatt (MW) wind energy facility that would be constructed on a 10,500-acre privately-owned tract near Diamond, Oregon. The ROW Applicant, Columbia Energy Partners (CEP), LLC of Vancouver, Washington, received a conditional use permit from the Harney County Planning Commission for the development of the Echanis Project in April 2007. The issuance of the permit was not appealed. The permit allowed for a maximum generating capacity of 104 MWs from 40 to 69 wind turbine generators. CEP commenced the environmental and cultural studies in support of the permit in 2007 and continued the studies in 2009. CEP has secured a 20-year power sales agreement with Southern California Edison for energy generated at the wind facility.

In 2009, Echanis, LLC (Echanis), a subsidiary of CEP, assumed responsibility from HEC for the ROW application submitted to the BLM. In December 2009, Echanis filed a separate application with the U.S. Fish and Wildlife Service (USFWS) to obtain rights for the proposed transmission line to cross portions of the Malheur National Wildlife Refuge (MNWR). Echanis is currently funding the transmission line project and would oversee the initial development and commissioning of the line. Once commissioned, the line would be deeded to HEC for long-term operation and maintenance and the line would be incorporated into the HEC electric transmission and distribution system serving southeast Oregon and northern Nevada. Once the line is deeded to HEC, it is proposed that the associated ROW would also be assigned to HEC.

Because development of the Echanis Project is dependent upon Federal approval of the ROW grant for the transmission line, the Echanis Project qualifies as a "connected non-Federal action" under 40 CFR 1508.7 and 40 CFR 1508.25(a). Therefore, this EIS must analyze the potential environmental effects associated with development and operation of the Echanis Project as "indirect effects" associated with the North Steens 230-kV Transmission Line Project, as well as cumulative impacts from other reasonably foreseeable future actions. While this environmental review requires disclosure of potential effects on private lands, as a connected action, the BLM and USFWS only have authority to approve, modify, or deny ROW grants for those actions occurring on public lands.

The BLM and USFWS are not responsible for the permitting of the Echanis Project. Rather, both agencies have been asked to approve a ROW request for a transmission line that would connect the Echanis Project to the existing grid.

The BLM and USFWS have prepared this Final EIS as part of the ROW grant application review process. The Final EIS allows the BLM, USFWS, and other cooperating agencies to assess the effects to the human environment prior to making a decision about the ROW grant application requested by Echanis. The Final EIS analyzes the potential environmental effects (direct, indirect, and cumulative) of two Action Alternatives and the No Action Alternative. One Action Alternative also includes two sub-alternatives (i.e., route options).

## PROPOSED AND CONNECTED ACTIONS

The Proposed Action under consideration in this analysis is the BLM's authorization of a new 150-foot ROW from the proposed Echanis Wind Energy Project to an existing 115-kV transmission line near Diamond Junction, Oregon operated by HEC. The proposed transmission line would cross 18.70 miles of private land, 8.85 miles of land administered by the BLM (Burns District Office), and 1.32 miles of the MNWR managed by the USFWS.

The transmission line, whether Proposed or Alternative routes, would be constructed on newly installed double-circuit steel-pole towers. During Phase I of transmission line development, the first circuit would be designed and constructed so that it could transmit 230-kV, but it would only initially be energized and operated at 115-kV (three conductors) for the Echanis Project. Future plans for Phase II call for a second line to be placed on the other side of the towers that would be designed and operated at 230-kV. This second circuit would be installed at an unknown date when additional electrical system capacity was required to transmit the power generated by the potential West Ridge, East Ridge, or Riddle Mountain Projects. The second phase of construction would use the same laydown areas, tensioning sites, and overland routes used during the first phase. As such, the Phase I construction would be the "heavy lifting" portion of the Proposed Action, comprising installation of the new poles along with foundations and access roads. Phase II would only require stringing of three more conductors on the previously erected poles (no additional pole installation), and thus relatively "light" work. Finally, the initial Phase I 115-kV line could be "re-energized" (no construction required) to 230-kV operation (Phase III) to transmit power if more than one or two of the West Ridge, East Ridge, or Riddle Mountain Projects is constructed and the additional capacity is needed after Phase II was implemented. It should be noted that implementation of Phases II and III of the Project Applicant's transmission line system would also require upgrades of the Harney Electric Cooperative's existing transmission lines and ancillary facilities in the area, from 115-kV to 230-kV capacity and operation.

For the Echanis Project, each turbine would have a 3-bladed up-wind rotor connected to a nacelle that houses a generator, gearing, and internal controls. Each nacelle would be mounted on steel tubular towers, varying in height from 213 to 263 feet tall. Each tower would be anchored to a steel and concrete foundation. The towers, including the rotor blades (at 12:00 o'clock position) would be approximately 415 feet tall. The normal maximum generation capacity of each turbine would range from 1.5 to 2.5 MW of electricity, depending upon the final number of turbines developed on the site.

Renewable energy generated by the Echanis Project would be transmitted and distributed to the regional power market via the proposed North Steens 230-kV Transmission Line and the regional electrical transmission grid. Echanis anticipates that the new transmission line and ancillary facilities could be used to transmit electric power from other potential wind energy projects developed in the Harney County area.

The Applicant has indicated that the North Steens 230-kV Transmission Line Project would improve ability to distribute available renewable energy as demand continues to grow for electric power from clean sources; reduce constraints in existing power generation and transmission infrastructure to meet current and future energy demands; increase transmission capacity and improve system reliability and flexibility; and allow for cost-effective electric transmission and economical power sales and transfers.

If a decision is made by the agencies to grant the ROW request, construction of access roads along the transmission line corridor and to the Echanis Wind Energy Project site would begin in ~~spring~~ of 2011. Construction of the towers and installation of the transmission line would occur during spring, summer, and

fall 2012, as dictated by ground conditions and weather. Construction of the Echanis Wind Energy Project would begin in 2011 and last approximately 9 to 12 months, depending upon weather and site conditions.

## ALTERNATIVES

This Final EIS analyzes the following three alternatives:

- Alternative A – No Action
- Alternative B, the West Route (the Proposed Action) - as described above, and also includes two additional route options (South Diamond Lane Route Option and Hog Wallow Route Option)
- Alternative C, the North Route (Preferred Alternative) - this 230-kV transmission line would begin at a new substation located on the Echanis Wind Energy Project site and end at a new interconnection station constructed adjacent to the existing HEC 115-kV transmission line near Crane, Oregon. The transmission line would be approximately 45.95 miles long, with approximately 33.66 miles crossing private land, approximately 12.10 miles crossing land administered by the BLM, and approximately 0.19 mile crossing state land.

This Final EIS has rigorously explored and objectively evaluated all reasonable alternatives as described above. Each alternative was evaluated for potential temporary and permanent impacts to geology and soils; water resources and floodplains; vegetation, special status plant species, and noxious weeds; wetlands and riparian areas; fish, wildlife and special status animal species; land uses, grazing, and realty; recreation; public services; visual resources; cultural resources; social and economic values and environmental justice; wild horses, burros, and areas of critical environmental concerns; Steens Mountain Wilderness, wilderness study areas, and wild and scenic rivers; transportation; public health and safety; air quality and climate change/greenhouse gases; noise; and energy.

## SCOPING

Public and agency scoping was conducted to determine issues relative to the Proposed Action. A Notice of Intent (NOI) to “Prepare an Environmental Impact Statement and Possible Resource Management Plan Amendments for the North Steens Transmission Line Project in Harney County, OR” was published in the Federal Register on July 27, 2009. Publication of the NOI initiated a 30-day public scoping period that formally concluded on August 26, 2009. The scoping period was subsequently extended to September 18, 2009 to allow for additional comments and one additional public meeting. A scoping notice and informational materials also were mailed to potentially interested parties during the summer of 2009. Five scoping meetings were held in Oregon during July 21-23 and September 18, 2009. All issues identified during scoping and BLM and Interdisciplinary Team reviews were evaluated to identify key issues that drove development of the alternatives and the impact analyses. Issues identified for analysis in the Draft EIS included potential Project impacts on: vegetation and the spread of noxious weeds; migratory birds and bats, greater sage-grouse and their habitat, and raptors and their nests; general wildlife and big game habitat; noise impacts on wildlife; potential effects on recreation; visual/aesthetics, including glare/light pollution from turbine lighting; sensitive archaeological resources and properties listed on the National Register of Historic Places; areas valuable to Native Americans; and the economic effects of the Project on rural communities and landowners (e.g., jobs and tax revenues).

## PUBLIC COMMENTS AND REVISIONS TO THE DRAFT EIS

During the public comment period, BLM received 265 comment submissions at the public meetings; through the Project website; and by fax, e-mail, and regular mail from the public, cooperating agencies, other federal agencies, Indian tribes, organizations, and businesses. An additional seven comment letters were received after the comment period closed. The 265 submissions contained 910 individual comments. Responses to the

comments on the Draft EIS are included in a comment-response matrix in Appendix G to this Final EIS. Substantive new text in the Final EIS is shown using underlined text, tables, and figures. Substantive text deletions are shown using strikethrough.

## ENVIRONMENTAL EFFECTS

### Geology, Soils, Biological Soil Crusts, and Erosion

Earthquakes and landslides are natural processes in the region and, without infrastructure, pose little risk. Seismic activity and landslides would be seen as hazards by all Action Alternatives. Construction of all Action Alternatives has the potential to increase soil erosion due to larger amounts of runoff during construction and clearing. Soils also have the potential of being affected by potential spill of harmful materials during construction. All Action Alternatives also have the potential to increase runoff due to roads and impervious surfaces. In the areas that are cleared during construction, biological soil crusts might be impacted. Additionally, in the implementation of any Action Alternative, biological soil crusts might be impacted by introduction of exotic vegetation that does not support biological soil crust recovery.

### Water Resources and Floodplains

#### Surface Water

Construction of all Action Alternatives has the potential to increase sedimentation in streams that would be crossed or in areas adjacent to construction. The Echanis Project turbines and associated structures would be located outside of any water courses or 100-year floodplains. The main access road leading to the Echanis Project would cross five water bodies, perennial Booners, Kiger, and Mud Creeks and two intermittent tributaries. The Kiger Creek crossing would be done with a bridge, and the three crossings of Mud Creek would be done with bottomless arch culverts. All other crossings would utilize culverts. The access road to the Echanis Project site would parallel Mud Creek for 2.5 miles and would parallel an intermittent tributary of Mud Creek for another 1.2 miles. The road alignment would be placed as far as possible from the creek. The minimum distance from the creek, as allowed by canyon width and the position of creek meanders, would range from 6 feet to greater than 50 feet. The transmission line for Alternative B – West Route would cross 11 streams: four perennial streams, five intermittent streams, and two intermittent canals. For Alternative B, an existing access road would cross a perennial stream, Cucamonga Creek, and an improved road would cross an intermittent tributary to the Donner und Blitzen River.

The transmission line for Alternative C – North Route would make seven crossings: three perennial streams (Kiger, McCoy, and Riddle Creeks) and three intermittent streams. Construction for new or improved access roads for Alternative C would not occur within 100 feet of any streams. All stream crossings are illustrated in Section 3.2 (Water Resources) Figures 3.2-2 through Figure 3.2-11.

For both Alternatives, pole locations would be selected to avoid riparian areas and waterbodies, and the spans would be sufficient to keep towers out of the stream areas. Also, roads would not be paved with impervious surfaces, but would be cleared and graded. Permanent effects would include reduced interception and infiltration of precipitation. Increased runoff due to roads and impervious surfaces has the potential to impact floodplains through increased flooding and erosion.

## Groundwater

During times of seasonal flooding, digging below the water table could introduce sediment into subsurface or surface waters. In addition, potential spills to ground water during construction could occur from equipment fueling or storage.

For Alternative B options, temporary effects to water resources would also occur where a 1.35-mile long segment of the existing 24.9-kV distribution line would be buried in a 6-foot deep trench within the existing distribution line ROW, parallel to South Diamond Lane, east of Highway 205. The excavation of the trench could introduce sediment to surface waters during rain events or if groundwater was present in the trench. If pumping groundwater out of the trench was necessary, sediment-laden water would be controlled through the use of sediment barriers, hay-bale structures, or filter bags at a controlled rate to prevent sedimentation. Additional precautions to avoid impacts from dewatering operations include those described in Section 2. Where the relocated distribution line would cross the Donner und Blitzen River and the Buena Vista Canal, directional boring methods would be used.

## Vegetation, Special Status Plant Species, and Noxious Weeds

Vegetation could be affected by construction and operation of the access roads, transmission lines, wind turbines, and associated structures. The Echanis Project would result in the loss of up to a total of about 93 acres of vegetation, including about 54.0 acres for new or improved access roads, 2.4 acres for turbine towers, 1.8 acres for the substation, and 1.3 acres for the overhead electrical lines. Alternative B would result in the loss of vegetation of about 25.3 acres for overland access roads, 0.4 acre for new or improved access roads, 1.9 acres for the overhead electrical lines, and 0.7 acre for the substation. Alternative C would result in the loss of vegetation of about 34.1 acres for overland access roads, 9.8 acres for new access roads, 2.3 acres for overhead electrical lines, and 0.7 acre for the substation. The majority of this vegetation would be sagebrush steppe (52.1 acres for the Echanis Project, 9.6 acres for Alternative B, and 21.9 acres for Alternative C) and juniper woodland (22.3 acres for the Echanis Project, 5.8 acres for Alternative B, and 3.1 acres for Alternative C), with smaller amounts of native grassland, dwarf sagebrush steppe, exotic annual grassland, agricultural lands, and other vegetation types affected.

If any special status plant species are present in the Project Area, they could experience direct or indirect impacts, such as use of herbicides to control noxious weeds. The Project includes protection measures for special status plants to reduce the potential for impacts to such species, including BLM best management practice requirements to avoid overspraying.

Any ground-disturbing or construction activity has the potential to further propagate invasive plant species populations in the location of the Project and its surroundings, either through introduction from other areas (on vehicles or other equipment) or through natural propagation via wind, animals, or other mechanisms.

## Wetlands and Riparian Areas

Potential effects to wetlands from the Proposed Action and Alternatives include alterations to wetland hydrology, alterations to the wetland plant communities, and the loss of wetlands from filling or sedimentation. No effects to wetlands would occur on the Echanis Wind Energy Project site. The majority of wetland impacts (2.4 acres) from the Echanis Project would be associated with construction and improvement of the main access road on private lands. Alternative B would span, but not be placed in, about 1.2 miles of wetland areas, less than 0.01 acre would be affected by pole placement, and another 0.74 acre would be affected by overland access roads. Alternative C would span, but would not be placed in, about 0.6 mile of wetland areas, less than 0.01 acre would be affected by pole placement, and 0.5 acre would be affected by overland access roads. Where constructed or improved roads parallel or cross riparian areas or wetlands, temporary, construction-related effects could be experienced, including the effects of equipment working within and adjacent to these areas. Vegetation in riparian areas might be temporarily altered due to

construction activities; effects might be more pronounced in areas of shrub scrub vegetation than those with herbaceous vegetation.

## Fish, Wildlife, and Special-Status Animal Species

### Fish

The Echanis Project would directly affect two perennial streams through the placement of culverts during construction of the access road, including one crossing of Kiger Creek and three crossings of Mud Creek. Alternative B would cross four perennial fish bearing streams: Kiger Creek, Cucamonga Creek, McCoy Creek, and the Donner und Blitzen River. Alternative C would cross three perennial fish bearing streams: Kiger, Swamp, and Riddle Creeks. The Project would not directly affect fish resources in these rivers and streams because no Alternative B or C features, including transmission line poles, access roads, or the interconnection station, would be located in or immediately adjacent to these water bodies. However, 0.5 acre of overland access roads associate with Alternative C would be located in wetlands adjacent to these creeks, so erosion from the Project Area could lead to sedimentation in these creeks.

### Habitat Conversion

The Echanis Project and main access road would result in the permanent conversion of about 57 acres of sagebrush habitat and 20 acres of juniper woodlands. Permanent effects on wildlife resources from Alternative B would result from construction and operation of the transmission line, interconnection substation, and access roads. There would be 30.9 acres of habitat permanently lost, including 12.0 acres of sagebrush habitat, 9.3 acres of grasslands, 6.4 acres of juniper woodlands, 2.4 acres of agricultural lands, 0.7 acre of wetlands, and 0.1 acre of developed lands. Overland travel roads would account for 25.3 of the 28.5 acres affected by access roads, transmission line poles would have a total footprint of 1.9 acres, and the interconnection substation and operation and maintenance building would require 0.7 acre.

There would be 38.2 acres of habitat permanently lost from construction of Alternative C, including 24.5 acres of sagebrush habitat, 8.6 acres of grasslands, 4.0 acres of juniper woodlands, 0.5 acre of wetlands, 0.3 acre of developed lands, and 0.2 acre of agricultural lands. Overland travel roads would account for 24.4 of the 34.5 acres affected by access roads, including 16.2 acres of sagebrush habitat and 2.6 acres of juniper woodlands. The transmission line poles would have a total footprint of 3.0 acres, and the interconnection substation and operations and maintenance building would require 0.7 acre. With all alternatives, the introduction of new access roads would further fragment the existing Project Area, reducing the size of contiguous sagebrush, grassland, juniper, and riparian habitats.

### General Wildlife

Permanent site features would directly or indirectly reduce the availability of wildlife habitat for foraging, courtship, breeding, rearing young, and cover for many general wildlife species. Noise and human activities associated with operations would displace individuals throughout the year, and during the spring maintenance vehicles could disrupt breeding of some species. Less mobile or burrowing non-game species would be susceptible to mortality from increased vehicular use at the Echanis Project site. Estimates of bird fatalities from the Echanis Project, based upon wind farm developments in the Pacific Northwest, range from 24 to 690 birds annually, with 19 to 538 (about 78 percent) of these being passerine species. The estimate of fatalities for other species include 0 to 22 raptors annually, 28 to 235 bats annually (mostly hoary and silver-haired bats), and minimal waterfowl and shorebirds.

Birds would be the group of animals most at-risk to injury and mortality from the transmission line, because they are susceptible to collision. However, the Applicant has agreed to adhere to the APLIC (2006) standards, which would reduce the possibility for avian mortality. Raptors are known to occur

along the entire length of Alternative B and Alternative C, while waterfowl and shorebirds would most likely be affected in and near the MNWR along Alternative B. For Alternative B, mitigation measures for the reduction of bird mortality, if needed, would be determined in coordination with the MNWR. Bats are not known to collide with transmission lines, based upon mortality surveys, so they would be unlikely to have any effect beyond displacement by permanent Alternative B or Alternative C Project features.

## Big Game

The Project would not likely cause direct adverse impacts to individual big game animals and big game populations. The Echanis Project would result in the loss of less than one percent of habitat in the game management units for mule deer winter range, elk winter range, pronghorn antelope range, and bighorn sheep habitat. The Alternative B transmission line would cross 101.7 acres of elk winter habitat, 342.5 acres of mule deer winter range, and 86.9 acres of antelope habitat. Access roads would be widened through 2.4 acres of mule deer winter range and new access roads would convert 0.7 acre of mule deer winter range to gravel surfaced roadway. Overland travel would occur through 14.5 acres of mule deer winter range, 4.2 acres of antelope range, and 4.8 acres of elk winter range. The Alternative C transmission line would cross 110.6 acres of elk winter habitat, 466.1 acres of mule deer winter range, and 370.8 acres of antelope habitat. New access roads would convert 18.4 acres of mule deer winter range and 2.0 acres of antelope winter range to gravel surfaced roads. Overland travel would occur through 4.8 acres of elk winter range, 11.7 acres of mule deer winter range, and 7.3 acres of antelope winter range. The transmission line would not require vegetative control in any of the antelope range, but in the elk and mule deer winter ranges the junipers and aspens would be periodically cut to control their height within the ROW. The existing mosaic of grassland, sagebrush, and juniper habitats in the winter ranges would be permanently altered by vegetation management within the ROW, but the removal of trees is not expected to limit winter range quality. The presence of grassland and sagebrush habitat in winter range is a benefit to big game for forage, and the limited removal of woodland habitat would cause only a negligible loss of cover.

## Special Status Animal Species

### Preble's Shrew

Permanent effects from the Project are likely limited for Preble's shrew, because once new construction is completed Project support activities (including travel) would be primarily restricted to developed areas that would not be inhabited by this species.

### Pygmy Rabbit

Alternative B would result in a small permanent loss of potential pygmy rabbit habitat (<1 percent) and displacement from the transmission line poles, access road improvements, and the interconnection station. Maintenance vehicles traveling overland to access the transmission line would have an undetectable chance of causing direct mortality because pygmy rabbits are a highly mobile species that would avoid vehicles by taking refuge in sagebrush or burrows.

### California Wolverine

The rarity of California Wolverines suggests that they would have a low probability of crossing Project lands, but if they were to be present, they likely would be displaced from areas with active use. The wolverine would be indirectly affected by Project maintenance activities and the presence of vehicles and pedestrians in the Project Area by displacing individuals that might enter the Project Area.

### Special Status Bats

Of the 10 special status bat species that could occur on-site, the silver-haired bat and hoary bat are the only two that have been documented as fatalities at other area wind developments. However, these two species comprise the majority of bat fatalities in the Pacific Northwest, and would likely account for nearly all of the 28 to 234 bat deaths estimated per year. The threshold for bats is an average mortality of 2.56 bats per turbine per year or mortality of 10 bats at any one turbine in a given year. If these thresholds are exceeded, mitigation would be initiated, as described in the Mitigation section of this EIS and in the ABPP/ECP. The TAC would monitor Project activities, including mortality data, and determine the need for additional mitigation.

### Greater Sage-Grouse

Greater sage-grouse would likely be displaced from their spring and summer habitats in the Echanis Project Area during maintenance activities, and likely would greatly reduce their time spent near the access roads and wind turbines. Direct mortality from collisions with wind turbines would likely be very low, because few deaths have been documented (USFWS 2008). No leks are known to occur within 3 miles of the proposed turbine locations on the Echanis site, so courtship and breeding would not likely be affected by the Project. There has been one reported sighting of a nesting female greater sage-grouse within 492 feet (150 meters) of a wind turbine in Washington (Strickland 2010) but there have not been any other reports or studies to support this observation since then. While more studies have been completed on oil and gas development and its effects on greater sage-grouse, the overall vertical structure and vehicle traffic might differ from other types of renewable energy developments, while similarities occur from fragmentation of native habitat by roads and infrastructure (Hagen 2011a). The effect of the presence of turbines in late brood rearing habitat is not certain at this time. Greater sage-grouse would be displaced from an area beyond the turbine footprint, but for how far and during which seasons has not been adequately researched. The presence of roads would not necessarily reduce greater sage-grouse use, but the timing and amount of road use would determine the extent that greater sage-grouse and other wildlife would avoid the road. Increased vehicle use on the Echanis site could lead to a slight increase in direct mortality from collisions, and the access road to the Echanis Project would be located as close as 1.2 miles from the Little Kiger lek. An approximately 3.5-mile segment of the Alternative C transmission line would be located 1.05 to 2.00 miles from the Little Kiger lek, but intervening topography would prevent a direct line of sight between the Alternative C transmission line and the lek. Nesting habitat does not occur along Alternative C, even in the absence of a transmission line. Until empirical data are available that quantify the effects of such developments on greater sage-grouse populations, interim guidance from the ODFW is being used to quantify areas of impact of Project features on greater sage-grouse (Hagen 2011b).

Increased raptor and corvid abundance has been documented in landscapes fragmented by man-made structures, which might result in increased predation rates to greater sage-grouse in the area of Alternatives B or C.

Using the model set forth in the *Mitigation Framework*, effects common to all alternatives would require approximately 4,105.1 acres of mitigation, with an additional 4,568.9 acres of mitigation for Alternative B or 4,857.0 acres for Alternative C.

### Special Status Raptors

Special status raptor species include bald eagles, golden eagles, northern goshawks, ferruginous hawks, and western burrowing owls. No suitable habitat exists on the Echanis Project site or main access road for the burrowing owl, and no northern goshawks or ferruginous hawks were observed during field surveys. Ferruginous hawks are unlikely to be present except during migrations. One bald eagle was observed in the fall during its southern migration over the Echanis Project site, but the bald eagles' preference for sites near water would make it likely to occur only as a migrant at the Echanis Project site. Bald eagle winter roost

areas are not present on the Echanis Project site. No bald eagle fatalities have been documented from collisions with wind turbines. Golden eagles were present at both the Echanis Project site and immediately west of the Echanis site, but were observed over canyons and away from ridges where turbines are proposed. No raptor nests for any special status species were found within 2 miles of the Echanis Project site. Given the potential for a lethal collision of a golden eagle with the proposed transmission line or wind development components, a Programmatic BGEPA permit would be required from the USFWS to provide operational coverage for the Echanis Project from the USFWS.

Direct effects to golden eagles would result from disturbance and mortality. Actions that resulted in disturbance from the development of the Echanis Project would include the effects of construction of the turbines and associated infrastructure. The mortality estimate for the Echanis Project to golden eagles is estimated to be approximately 0 to 3 golden eagles per year (Echanis 2011). The Applicant is working with the USFWS to develop an ABPP/ECP (Appendix F) for the Echanis Project site. This plan would be used to ensure consistency with both the MBTA and the BGEPA. This plan would apply to species covered under the MBTA and BGEPA.

### **Special Status Waterfowl and Shorebirds**

The MNWR has highly valued waterfowl habitat and is located along a migratory pathway. Special status waterfowl are prone to collisions with transmission lines, and where Alternative B crosses the MNWR it is anticipated that some mortality would take place. Seven species of special status waterbirds occur in the Project Area: western least bittern, white-faced ibis, black tern, trumpeter swan, snowy egret, Franklin's gull, and American white pelican.

APLIC (2006) standards would be used to reduce mortality, and would include designs that provide for separation of conductors to provide isolation of the lines, insulation of phases or grounds where adequate separation was not feasible, and use of line marking devices.

### **Special Status Passerines and Woodpeckers**

There is a low likelihood that the six special status passerine species that occur at the site (yellow-breasted chat, willow flycatcher, olive-sided flycatcher, black rosy finch, Lewis' woodpecker, and white-headed woodpecker) could be affected by collisions with the turbines at the Echanis Project site. During spring or fall migration these species could be at a greater risk of collisions with turbines.

Special status passerine and woodpecker species would be displaced from their locations of suitable habitat where the transmission lines, transmission poles, and substation would be built. The displacement into adjacent habitat would cause an undetectable effect to these species, because of the small Project footprint and because most flight time for these birds would be below the vertical elevation of the transmission lines. An undetectable level of mortality could occur for some of these species from collisions with the transmission lines.

### **Mountain Quail**

Other wind developments are not known to have been constructed in mountain quail habitat, so no records of mortality exist. However, other gamebird species fatalities have been found at other wind developments, so it is possible that the Echanis Project could cause a low level of mortality for this species from collisions with turbines. Increased collisions with vehicles from maintenance and other operational traffic could occur, although it is likely to be undetectable. Because mountain quail are ground birds that make low-level flights that would occur primarily below the transmission line, they are unlikely to collide with transmission lines.

### Northern Sagebrush Lizard

Northern sagebrush lizard would be susceptible to crushing by vehicles from maintenance operations where access roads traverse suitable sagebrush habitat occupied by the lizard. It is likely that the elevated levels of vehicle use during maintenance activities could cause an undetectable increase in mortality.

### Land Uses, Grazing, and Realty

Land use within the Project Area is characterized by a mix of public and private land holdings managed and regulated by the BLM, USFWS, the State of Oregon, and Harney County. The BLM Burns District administers over 3.2 million acres of public land, primarily in Harney County, including major portions of the Project Area and surrounding area. BLM lands are managed under a set of coordinated land use plans that address a wide range of resource management activities under individual unified plans. Lands within the Project Area administered by the USFWS include the MNWR, which is managed under USFWS-prepared resource management plans. Privately owned lands within the Project Area are managed and regulated by the Harney County Planning Department through a county-wide comprehensive planning process, which is implemented through the Harney County Zoning Ordinance.

The nearly 19-mile long main access road for the Echanis Project would cross about 14.7 miles of the Andrews Resource Area (RA) and 4.2 miles of the Three Rivers Resource Area, including about 7.1 miles within the Steens Mountain Cooperative Management and Protection Area (CMPA). Of that main access road, about 17.5 miles (84.7 acres) would be located on private property and about 1.5 miles (about 7.2 acres) would be located on public land administered by the BLM. No portion of the main access road to the Echanis Project site would be located on public land within the CMPA. Approximately 17.1 miles (33.2 acres) of additional service roads (i.e., string roads) also would be developed on the Echanis Project site, converting existing rangeland to non-rangeland use. The wind turbines would convert up to about 2.4 acres to non-rangeland use, while the new substation and operation and maintenance building would convert about 1.9 acres to non-rangeland use.

The Proposed Action and Alternatives (including transmission line route options, design options, and access roads) would require ROW grants from the BLM and USFWS. ROW would also be required from approximately 10 to 30 property owners (depending upon the alternative or route option) to construct transmission lines and access roads across private lands, including two parcels owned by the state of Oregon. For all Action Alternatives, the permanent ROW width would be 150 feet. In certain areas, an additional 10 feet of temporary construction easement would be required on each side of the ROW to allow for equipment operation during installation of poles, conductors, and any required guy wires. A 40-foot wide ROW would be required on public lands to accommodate new and improved access roads.

The Project Applicant has submitted applications to the BLM and USFWS for ROW grants to cross Federal lands. Of the 28.8 miles of transmission line ROW under Alternative B, approximately 8.9 miles (about 158 acres) would cross BLM-administered land and about 1.32 miles (24.0 acres) would cross lands administered by the USFWS. However, the actual footprint of the poles would only occupy about 0.6 acre of BLM-administered land and 0.07 acre of USFWS-administered land. Approximately 26.3 miles of the transmission line would cross the Andrews RA and 2.6 miles would cross the Three Rivers RA. No portion of the transmission line that would cross public land would be located within the CMPA.

Under Alternative B, the Project Applicant would negotiate agreements with private land owners to develop 18.7 miles (343.3 acres) of transmission line ROW and 17.5 miles of new overland access road ROW on private lands. However, the actual footprint of the poles would only occupy about 1.2 acres of private land. Approximately 5.9 miles of the transmission line and overland road that would be located on private land would also be located within the Steens Mountain CMPA.

Of the approximately 45.9 miles of transmission line ROW under Alternative C, approximately 12.1 miles (about 220.6 acres) would cross BLM-administered land. However, the actual footprint of the poles would only occupy about 0.8 acre of BLM-administered land. Approximately 12.6 miles of the transmission line would cross the Andrews RA and 33.3 miles would cross the Three Rivers RA. No portion of the transmission line that would cross BLM-administered land would be located within the CMPA.

Under Alternative C, the Project Applicant would negotiate agreements with private land owners to develop 33.7 miles (612.3 acres) of transmission line ROW and 18.2 miles of new access roads and new overland access roads ROW on private lands. Approximately 23.3 acres of additional ROW outside of the transmission line ROW would be required to accommodate overland access roads. Of this total, approximately 5.9 miles of overland roads would be located on private land within the Steens Mountain CMPA. However, none of the overland roads would cross BLM-administered land within the CMPA.

The Applicant has made formal arrangements with the owners of the Echanis Project site to deploy between 40 to 69 wind turbines, 14.8 miles of new access roads, a system of underground electric cables, a substation, and an operations and maintenance building on the site.

### Recreation

Impacts of the Echanis Wind Energy Project to recreational areas would be primarily visual. The Echanis Project site includes approximately 2,353 acres of the Steens Mountain CMPA. While no wind turbines would actually be constructed within the CMPA, the Echanis Project would be visible from recreation areas within the CMPA, including the Mann Lake Recreation Site (3.5 miles from the Project) and the East Rim Overlook (7.6 miles from the Project). The Echanis Project would be prominent along the ridgeline above the Mann Lake Recreation Site and travelers would be able to view the turbines along portions of East Steens Road. It is anticipated that the visual quality for some recreational visitors would decline as a result of the presence of the wind turbines, while other visitors would find the wind turbines interesting and would travel to view the new development.

Under Alternative B, the transmission line would traverse 5.9 miles of the CMPA (on private lands), 1.32 miles of the MNWR, and cross over the Oregon High Desert National Recreation Trail. Very few travelers on the Oregon High Desert National Recreation Trail would likely be affected by walking underneath the transmission line, given that much of the trail currently follows existing roads in some sections. The Buena Vista Trail located along Buena Vista Lane within the MNWR could have distant views of the transmission line. Alternative B would be approximately 3 miles from the Kiger Wildhorse Viewing Area (KWVA), however, visual simulation analysis of the area surrounding the KWVA indicates that the transmission line would be only faintly visible. Alternative B would cross the Blitzen Valley Auto Tour Route, along the portion of the auto route that is located on Highway 205, and would be approximately 4 miles from the Buena Vista Overlook. Additionally, visitors traveling the High Desert Discovery Scenic Byway (Highway 205) would see the transmission line when it crossed the Byway. For those travelers using South Diamond Lane, the transmission line would likely be visible near the intersection of South Diamond Lane and Lava Beds Road, and it would remain visible until near the town of Diamond.

Under Alternative C, the transmission line would traverse approximately 6.0 miles of the CMPA (on private lands). Approximately 7.0 miles of its length would be within the Kiger Mustang ACEC. The transmission line would intersect the Diamond Loop Backcountry Byway, east of the town Diamond, and would cross the Byway in four different locations. The transmission line would then separate from the Diamond Loop Road, run parallel to Lava Beds Road, and then intersect Highway 78 near the intersection of Lava Beds Road and Highway 78. The North Route would parallel Highway 78 for approximately 10 miles and the Diamond Loop Backcountry Byway for 6 miles. This would place travelers along these two routes directly in view of the transmission line for extended periods. Alternative C would also be relatively close to a number of developed recreation sites. The transmission line would be approximately 3 miles from both the KWVA and Crane Hot Springs, 2 miles from the Round Barn, parallel Highway 78 for approximately 10 miles, parallel

the Diamond Loop Backcountry Byway for approximately 6 miles, and cross over the Oregon High Desert National Recreation Trail. The very few travelers on the Oregon High Desert National Recreation Trail likely would be minimally affected by walking under the Alternative C alignment, given that much of the Oregon High Desert National Recreation Trail currently follows existing roads in some sections. Recreational hikers using the Buena Vista Trail could also have distant views of the Alternative C transmission line.

Improvements to existing access roads, new access roads, and overland access roads would be required for all Action Alternatives for vehicle and equipment access to the transmission line corridor during initial construction and for inspections, maintenance, and repair of poles, insulators, and conductors during long-term operation. Construction and improvement of access roads would provide increased access to areas that were previously inaccessible by vehicle. The public use of roads would be determined on a case-by-case basis with the BLM and USFWS. To limit new or improved recreational access into areas, all new access roads that would not be required for maintenance would be closed, as appropriate and in coordination with the BLM or USFWS Authorized Officer. In the event of a conflict between the Applicant's road requirements and the BLM or USFWS, BLM or USFWS requirements would take precedence. For those roads where access to public lands could be obtained, it is anticipated that no changes to recreational resources would occur because the principal use of those lands is for dispersed recreation. BLM would retain the right to decide permanent road closures for lands administered by the BLM.

### Visual Resources

Project effects to visual resources situated within the Project Area were evaluated using the BLM's Visual Resource Management (VRM) system. Key Observation Points (KOPs) were selected based upon areas of high visual sensitivity, angle of observation, number of viewers, public access, length of time the Project was in view, relative Project size, season of use, and light conditions. The proposed and alternative routes for the transmission line crosses lands that have been previously classified by the BLM. The classes range in number from I to IV; from an area where acceptable contrasts are primarily natural ecological changes to an area where the contrast might dominate the view and the major focus of viewer attention. Under Alternative B, approximately 1.89 miles of the transmission line would cross VRM Class II lands and 6.08 miles would cross Class III lands. The South Diamond lane route option would cross 0.74 mile of VRM Class II lands and 0.47 mile of Class III lands. The Hog Wallow Route Option would cross 0.01 mile of VRM Class II and 1.05 miles of Class III lands. Alternative C would cross 0.09 mile of VRM Class II, 2.4 miles of Class III, and 3.5 of Class IV lands. For those sections of the Proposed Action and Alternatives situated within BLM-managed VRM Class II areas, the VRM management objectives would not be met. When a proposed alternative or preferred action does not conform to management goals and objectives (i.e., manage public land action and activities in a manner consistent with VRM class objectives), a RMP Amendment must to be prepared. For the Project or Alternatives to be approved by the BLM, an RMP Amendment would be prepared.

While the Echanis Project would be located on private lands, several components of the Project would be located within 200 meters of VRM Class II lands. The visual effect of the Echanis Project would be high to moderate for several KOPs located on BLM lands. Due to the Echanis Project's proximity to VRM Class II lands, the Project could affect the scenic view quality from these lands. The character of the adjacent scenery and cultural modifications near the VRM Class II lands immediately near the Echanis Project would change. While these effects would be moderate to high, the Echanis Project would not alter the rating of BLM land with VRM Class II management objectives. Further, the Echanis Project would be located on private lands that are not subject to BLM's jurisdiction and the agency's visual resource management objectives. While mitigation measures have been proposed to reduce effects to visual resources, they might not be implemented.

Nighttime light pollution from lighting at the substation and O&M facility would be minimal. To minimize light pollution caused by red or white flashing obstruction strobes, the Applicant would utilize a system that simultaneously flashes all obstruction lights and that utilize a narrow vertical beam.

Temporary effects to visual resources caused by the Project and Alternatives construction would include dust and associated atmospheric haze generated during the use of access roads, disturbed areas that are normally vegetated, and the use of stakes and flags to mark construction zones. BMPs would be implemented to diminish these effects.

## Public Services

Potential impacts to public services during construction would arise primarily from the presence of the construction workforce and equipment in the region. During operations, public service effects would be based upon the size of the operations workforce and indirect employment in the region, as well as the operating requirements of the transmission line. The Project Area is located in a region susceptible to large-scale wildfires. The biggest two risks of fire for the transmission line ROW and the Echanis Project would be catastrophic failure of transmission line and wind power equipment and lightning strikes.

## Cultural Resources

### Archaeological Resources

Archaeological resources identified in the Project Area of Potential Effect (APE) consisted mainly of prehistoric lithic scatters (stone tools or flakes), rock features, and ground stones (type of stone tools); as well as historic period cans, bottles/glass, rock alignments, building and structural remains, and miscellaneous early and mid-20th century refuse and debris. Within the Echanis Project APE, there are two NRHP eligible or potentially eligible sites and one NRHP eligible cultural feature that would be affected. The sites could be adversely affected by construction of the main access road to the Echanis Project site, placement of turbines, installation of the overhead and underground power collection system, construction of onsite access roads (i.e., string roads), and increased human activity from ongoing maintenance. The two potentially NRHP eligible sites and the one historic cultural feature would be avoided, if possible, by relocating or reconfiguring Project-related facilities on the Echanis Project site or along the alignment of the main access road. If avoidance would not be possible, further testing and formal evaluations for eligibility for listing in the NRHP would be conducted for each identified resource.

Eighteen NRHP eligible and potentially eligible archaeological sites within the Alternative B – West Route APE would experience permanent adverse effects from the proposed Project through direct disturbance and/or indirect visual effects. Ten preliminarily NRHP eligible and potentially eligible archaeological sites within Alternative C – North Route APE would experience permanent adverse effects from the proposed Project through direct disturbance and/or indirect visual effects. Permanent adverse effects could result from the installation of transmission poles, construction of access roads, and increased human activity from regular long-term maintenance activities.

While no traditional cultural properties (TCPs) or sacred sites eligible for the NRHP have been identified within the APE to date, such sites, if identified, could experience long-term visual effects. These sensitive areas could also include important archaeological sites that could be adversely affected.

### Architectural/Historical Resources

Architectural/historical resources identified within the Project APE consisted mainly of wood or metal frame, vernacular farmstead/ranch buildings and agricultural outbuildings, wooden bridges, lined/unlined canals, and abandoned commercial buildings. Five architectural/historical resources were identified in the APE for Alternative B, however only one resource was determined to be eligible for the NRHP based upon its age and integrity. Construction activities could create noise and vibrations that would affect architectural/historical resources and stockpiling construction materials and equipment would cause short-term visual effects. Permanent adverse effects could result from the installation of transmission poles, and increased human activity from regular long-term maintenance activities.

Twenty-one architectural/historical resources were identified in the APE for Alternative C, six of which were determined to be eligible for listing in the NRHP. Construction activities would not be expected to adversely affect NRHP eligible architectural/historical resources within the APE. The permanent or long-term effects of Project actions in Alternative C – North Route would be visual. The six NRHP eligible architectural/historical properties within the APE are located a significant distance from the proposed transmission lines and/or along existing roadways. Due to the distance between the proposed transmission lines and the architectural/historical resources, and the poles that would tend to blend in with the existing landscape and infrastructure (roadway), neither is a significant visual effect to the resources. Additionally, none of the resources are oriented to take advantage of a specific vista in which power lines are proposed. These visual effects, therefore, are not adverse.

Because no survey and inventory of architectural/historical resources was conducted within the Echanis Project APE, no NRHP eligible architectural/historical resources were identified and no Project effects were determined within that area.

### Social and Economic Values and Environmental Justice

The construction phase employment effects on the county would be primarily from labor hired to construct the Echanis Project and any of the Action Alternatives. Construction of the Echanis Project would generate approximately 100 jobs, Alternative B would generate approximately 100 jobs, and Alternative C would generate approximately 60 jobs. During the operations phase of Echanis Project, maintenance and operations jobs also would be generated. The Applicant estimated that the Echanis Project would directly employ approximately 10 workers and an additional worker would be required for operation of either of the selected transmission lines. Employment opportunities resulting from the purchase of Project-related materials for the Echanis Project, such as the total spending on local goods and services, would be fairly low (\$20,000 for the Echanis Project). Some employment (indirect and induced), however, is expected to result from increased household spending due to Project-related income. In particular, household spending of income from the Echanis site lease payment during the operations phase are expected to generate approximately five jobs in the county for the life of the Project. Total employment effects during the nine-month Echanis Project construction are estimated to be 145 jobs (direct, indirect, and induced), plus 130 jobs for Alternative B or 74 jobs for Alternative C. Long-term operation of the Echanis Project is expected to generate 15 jobs (10 direct jobs and 5 induced jobs) and the selected transmission line alternative would generate one additional job over the next 40 years.

County income as a result of the Echanis Project is expected to rise during the construction period by approximately \$5.0 million. Long-term annual income during the 40-year operations phase is expected to increase by an estimated \$1.3 million. In present value terms, county income over the life of the Project would increase by approximately \$34.0 million.

Property on which the Echanis Project would be located would experience viewshed effects but also would be compensated with an annual lease payment. No property value effects are estimated for wind farm proximity/viewshed impairment. Additionally, no homes are nearby (within 500 feet) Alternative B, further suggesting that there would be no effects on residential home values. The property value effects of Alternative C would likely be the same or slightly greater than the effects of Alternative B. Seven homes would be located within 500 feet of the Alternative C alignment and thus could be affected by the transmission line.

Overall, the effect of the Echanis Project on community services is expected to be negligible. It is expected that the increase in public service demands would either have been funded directly by the Applicant or would be met locally by public service providers paid by Applicant. Therefore, the net fiscal effects are expected to equal the additional tax revenues generated by the Echanis Project. Increased real estate tax revenues were estimated to be \$60,000 annually, starting in the first year of operation, and would escalate at three percent

annually thereafter, reaching \$190,000 in year 40. Over the 40-year life of the Project, this would amount to a total of \$4.5 million in real estate taxes, with a net present value of \$2.3 million.

The \$4.5 million in increased real estate taxes combined with an estimated \$35.5 million in increased personal property taxes would result in an estimated net present value of \$23.1 million, assuming a three percent discount rate and a 40-year project life. This would be equivalent to an annualized payment of \$1.6 million per year. If the Echanis Project operated for more than 40 years, the total present value of tax payments over the new life of the Echanis Project would be greater.

No disproportionate effects were identified for minority or low-income populations as a result of the Echanis Project and the North Steens Transmission Line Project. However, they would result in a change in the character of the area from a rural, undeveloped, and open landscape to a slightly developed one, thereby representing a change to the lifestyle and social values held for the Project Area.

### Wild Horses, Burros, and Areas of Critical Environmental Concerns

The primary effects on BLM lands designated as wild horse herd management areas (HMAs) and areas of critical environmental concerns (ACEC) would be from construction and operation of the transmission line and access roads, including periodic maintenance inspections and repairs. Permanent effects would include the loss of vegetation consumed by wild horses or used as refuge (i.e., juniper treed) from various permanent Project features, including transmission line poles, access roads, or interconnection stations. Temporary effects would include vegetation damage, or increased risk of fire due to heavy equipment operation or the transport and storage of construction materials. Mitigation is proposed where permanent and temporary effects could be reduced by implementing reasonable and effective mitigation measures.

### Steens Mountain Wilderness, Wilderness Study Areas/Lands with Wilderness Characteristics, and Wild and Scenic Rivers

Under all of the Action Alternatives, potential effects to wild and scenic rivers (WSRs) would be from the introduction of man-made structures that would impair views and generate noise during operation. The only WSR situated within the 5-mile analysis area is the Kiger Creek WSR. Located over 2 miles from the southern tip of the Echanis Project, the lands situated within the Kiger Creek WSR would not be affected by Project operational noise and would not have views of the operating wind turbines. Topographic screening, namely the walls of the Kiger Gorge, would preclude views of the Echanis Project wind turbines from areas within the boundary of WSR-designated lands. About 37.9 acres, or 2.7 percent of the total 1,420 acre Kiger Creek WSR, would have background views of the transmission line where it would cross private and public lands. Due to the approximately 6-mile distance of the transmission line from the Kiger Creek WSR, the effects on views within the Kiger Creek WSR would be minimal because the transmission lines would appear in the background.

Because no Project facilities would be constructed within the Kiger Creek WSR, none of the Project Action Alternatives would impair the free-flowing characteristics of Kiger Creek or affect the scenic, geologic, recreational, fish, wildlife, vegetation and botanical, cultural, or historic outstandingly remarkable values (ORVs) specific to these WSR designated lands. Lastly, none of the Action Alternatives would affect the characteristics that support the designation of the Kiger Creek WSR as being "wild." The Project would not impair the free-flowing characteristics specific to WSR lands.

No Wilderness Areas, wilderness study areas (WSAs), lands with wilderness characteristics (LWC), or WSRs would be located within 5 miles of Alternatives B or C. However, one wilderness area, five WSAs, one LWC, and one WSR would fall within the boundaries of the analysis area, as defined by the 5-mile radius viewshed. Because the Echanis Project would be located on private property, no portion of the Project site would be considered a Wilderness Area, WSA, or LWC. No WSRs would be located within the boundaries of the Echanis Project.

The Project would be visible from portions of the northernmost part of the Steens Mountain Wilderness. However, no Project facilities would be located within the Wilderness Area and, thus, would not affect its natural condition. Approximately 822 acres (0.5 percent) of the Wilderness Area would have foreground to middleground views of the transmission line. Opportunities for solitude would be diminished on those parts of the Steens Mountain Wilderness that would have views of the Project. Project construction and operation would be visible from the Steens Mountain Wilderness, but the visibility of these Project activities would not diminish or restrict opportunities for primitive and unconfined recreation. Similarly, the Project would affect the scenery that is located outside of the Wilderness Area, and potentially affect vegetation, habitat, wildlife, and historic properties within the Analysis Area, but would not affect any of these resources within the Wilderness Area itself.

The High Steens WSA, Lower Stonehouse WSA, Stonehouse WSA, Heath Lake WSA, and West Peak WSA and Lower Stonehouse LWC would all be located within a 5-mile radius of the Analysis Area. Project features on the Echanis Project site would be visible from portions of all five of the WSAs and the one LWC. Wind turbines would be located within a few hundred meters of the Lower Stonehouse WSA, about 0.5 mile from the High Steens WSA, about 3.0 miles from the West Peak WSA, 4.0 miles from the Stonehouse WSA, 4.5 miles from the Heath Lake WSA, and approximately 200 meters from Lower Stonehouse LWC. Noise levels in the Lower Stonehouse WSA and LWC would exceed ambient levels and could exceed OEQC standards from the close proximity of the wind turbines. Excessive noise at the Lower Stonehouse WSA and LWC would further diminish the already limited opportunities for solitude, making it difficult for a visitor to find seclusion and isolation from the developed world. Notable visual effects would occur within the West Peak WSA, Lower Stonehouse WSA and LWC, and the High Steens WSA. The visibility of wind turbines from these three WSAs and one LWC would diminish opportunities for solitude, making it difficult for a visitor traveling through these areas to find seclusion and isolation from the developed world.

Conditions of approval in the Harney County Conditional Use Permit No. 07-14 issued on April 18, 2007, and revised on May 21, 2008 include coloring exterior components of the wind turbines so that they are off-white or light gray for the blades, towers, and nacelles and using flat, semi-gloss, or galvanized finishes to minimize glare and reduce visibility. The conditions also require operating the Project so that noise does not exceed allowable statistical noise levels in any one hour, as measured at off-site sensitive receptors, under applicable OEQC noise standards, and using hooded site lighting to minimize light during evening hours (not including lights as required by the FAA). In response to public comments, mitigation measures have also been proposed to reduce visual and noise impacts.

### Transportation

To support the Project, access roads would be improved and some new roads would be built across both private and public lands, as described above. There would likely be occasional increased traffic and short delays in the vicinity of construction. Specialized trucks would be used to transport the large components that make up each wind turbine to the Project site. During peak activity, up to 36 truck trips per day would access the Project site using state highways and county roads.

### Public Health and Safety

#### Fire Hazards

While unlikely, a potential fire risk exists from malfunction of the wind turbine generators and transformers at the Echanis Project. Temporary effects to public health and safety from fire hazards could occur if sparks from equipment used during construction made contact with combustible material. When the transmission line is energized during operation, it could potentially cause a fire hazard if a conducting object were to come into proximity of the transmission line, resulting in a flashover to ground, or if an energized phase conductor were to fall to the earth and remain in contact with combustible material long enough to heat this material and cause a fire. Sparks from equipment used during operation and maintenance of the transmission line,

interconnection stations, and substation also pose a risk of fire. Permanent effects from operation of the transmission line, interconnection stations, and substation also include increased risk of fire from inadequate clearance between vegetative fuel loads and Project facilities.

## Hazardous Materials

In general, most potential effects associated with hazardous materials would involve the release of toxic materials into the environment from improper use, storage, or disposal of these materials. Direct effects of such releases could include contamination of vegetation, soil, and water, which could result in indirect effects to human and wildlife populations. These effects have the potential to occur during construction, operation, and maintenance activities; therefore, the effects described below would be both permanent and temporary.

The use of hazardous materials during Project construction, operation, and maintenance would pose potential health and safety hazards to construction and maintenance workers and nearby residents. These effects would be associated with blasting during Project installation, use of hazardous substances during construction and maintenance activities, and the potential for spills.

## Electric and Magnetic Fields

Electric and magnetic fields (EMFs) associated with wind projects occur during the transmission of the energy produced by the turbines to the main electricity transmission grid for distribution. Short-term effects from transmission line electric fields are associated with perception of induced currents and voltages or the perception of the field. Induced current or spark discharge shocks can be experienced under certain conditions when a person contacts objects in an electric field. Such effects occur in the fields associated with transmission lines that have voltages of 230-kV or greater. These effects could occur infrequently under the proposed North Steens Transmission Line Project.

Magnetic fields associated with transmission and distribution systems can induce voltage and current in long conducting objects that are parallel to the transmission line. The expected electric field levels from the proposed line at minimum design clearance would be comparable to those from existing 115-kV and 230-kV lines in Oregon, and elsewhere. The expected magnetic field levels from the proposed line would also be comparable to those from other 115-kV and 230-kV lines in Oregon, and elsewhere.

The electric fields from the proposed line would meet regulatory limits for public exposure in Oregon and all other states that have limits and would meet the regulatory limits or guidelines for peak fields established by national and international guideline setting organizations. The magnetic fields from the proposed line would be within the regulatory limits of the two states that have established them and within guidelines for public exposure established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the Institute of Electrical and Electronics Engineers (IEEE). The state of Oregon does not have limits for magnetic fields from transmission lines.

Short-term effects from transmission line fields are well understood and can be mitigated. Nuisance shocks arising from electric field induced currents and voltages could be perceivable on the ROW of the proposed transmission line. Such occurrences are anticipated to be rare. It is common practice to ground permanent conducting objects during and after construction to mitigate against such occurrences.

## Aviation and Military Operations

The Applicant has secured No Hazard to Air Navigation Determinations from the Federal Aviation Administration for each of the proposed wind turbines. At the request of the FAA, the Applicant consulted with Department of Defense (DoD) officials prior to the issuance of these determinations. FAA determinations are not required for the transmission line component of the Project because they would be less than 200 feet tall, the minimum height that triggers FAA approval.

Although the FAA has determined that the wind turbines would not constitute a hazard to air navigation, the agency did recognize that the structures would be in or near military training routes. These structures might become a collision hazard to military aircraft during low level, high speed maneuvers. Development of the Echanis Project would require the military to raise their authorized flight floor to a safe level above turbine height.

The turbines would also pose a collision hazard to local, low-level civilian aircraft. This potential hazard would be somewhat less than to military aviation because civilian aircraft are typically flying at slower speeds, not focused on training, and there are fewer numbers of these kinds of aircraft utilizing the area.

### Air Quality and Climate Change/Greenhouse Gases

The potential effects on local and regional air quality and global climate change from the proposed Echanis Project and North Steens Transmission Line would be minor. Short-term temporary construction effects could occur from criteria pollutants (combustion contaminants), fugitive dust (earthmoving and road usage), and greenhouse gases as a result of construction, but would be below thresholds and no construction mitigation would be required.

### Noise

The impact of construction noise pollution as a result of the Echanis Project and North Steens Transmission Line would mainly result from a temporary increase in ambient noise levels from the use of on-road vehicles, off-road equipment, and aircraft in the immediate vicinity of the site and ROW. In addition, construction activity could temporarily cause ground-borne vibration if rock drilling, pile driving, or blasting is required. Routine inspection and maintenance activities could also briefly increase ambient noise levels once construction is complete. Due to the remote location of the wind farm on Steens Mountain, construction and maintenance noise and vibration effects generally would be minimal. During operation of the Echanis Project, noise levels in the Lower Stonehouse WSA and LWC would exceed ambient levels and could exceed OEQC standards from the close proximity of the wind turbines.

### Energy

The Echanis Project would result in an increased supply and transmission of clean, renewable wholesale electric power available to utilities for retail sales in the states of California and Oregon. The Echanis Project, and other potential wind energy generation projects being proposed in the Project Area, would be different from most of the wind energy projects in Oregon currently located along the Columbia River Gorge. The Echanis Project and other possible wind energy projects would produce peak power during winter months, which would complement Columbia Gorge wind projects and potentially benefit the balancing required by BPA.

## MITIGATION MEASURES

Mitigation measures are actions that could reduce, avoid, or compensate for the effects of the proposed alternatives. Actions are only termed mitigation measures if they have not been incorporated into the Proposed Action or Alternatives. If mitigation measures are incorporated into the Proposed Action or Alternatives, they are called "Project Design Features (PDFs)." Construction practices undertaken as a part of the Proposed Action that also avoid or reduce Project effects are referred to as Best Management Practices (BMPs). PDFs and BMPs are summarized at the end of Section 2 and in Appendix A. Mitigation measures suggested or proposed by technical experts who prepared this EIS appear within the impact assessments prepared for each technical section. It should be noted that a number of mitigation measures have been adopted into the Project as PDFs and/or BMPs. Exhibit B to the Harney County Conditional Use Permit

(20070853), for instance, contains a number of measures that have been integrated into the Project as PDFs and/or BMPs.

In response to public comments on the Draft EIS, the BLM conducted an additional assessment of potential mitigation for Project-related effects for various resources. This effort was initiated to ensure that the proposed measures directly and more comprehensively addressed potential Project effects. Environmental documents and other guidance for wind energy projects were reviewed for applicability and potential application. Additional PDFs and BMPs were also identified to further avoid and/or minimize Project effects. While the BLM's decision could include any of the listed mitigation measures discussed in Sections 2 and 3, implementation of some of the measures are beyond BLM's jurisdiction because they would apply to private lands. There is a probability, therefore, that some of the proposed mitigation would not be implemented. In general, the BLM assumes that mitigation measures contained in the Right-of-Way Grant and that apply to direct effects to federal land would be implemented by the Applicant or applicable federal agency. For greater sage-grouse, the recommendations from the ODFW *Mitigation Framework* (Hagen 2011b) identifies the guidelines for mitigating for impacts to greater sage-grouse resulting from energy projects in areas identified as Core or Low Density under the Core Area approach described in the *Sage-Grouse Strategy*. The *Mitigation Framework* states that if the Project is in a Core Area and would impact greater sage-grouse habitat, the recommendation would be to avoid impacts to those habitats. For impacts in Low Density Areas, the ODFW recommends mitigation such that there is "no net loss with a net benefit" (Hagen 2011b). These guidelines would be implemented for the Project, resulting in mitigation totaling 8,734 to 9,022 acres, depending upon the alternative chosen. This total is subject to change pending final calculations and discussions between the Applicant, ODFW, USFWS, and BLM.

The Applicant is working with the USFWS to develop an ABPP/ECP (Appendix F) for the Echanis Project site. This plan would be used to ensure consistency with both the MBTA and the BGEPA. This plan would apply to species covered under the MBTA and BGEPA. Based upon the data provided in the ABPP, the average avian mortality per turbine of wind projects with habitat types similar to the Echanis Project is 2.70 birds and 2.56 bats per year, or mortality at any one turbine is 10.0 bats or birds in a given year. If these thresholds were exceeded, mitigation would be initiated. Mitigation would be conducted in phases, to be implemented chronologically as avian and/or bat thresholds were exceeded.

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