

Keeler to Tillamook Transmission Line Rebuild Project

Finding of No Significant Impact

Bonneville Power Administration
DOE/EA-1931
January 2014

Summary

Bonneville Power Administration (BPA) announces its environmental findings on the Keeler to Tillamook Transmission Line Rebuild Project. BPA's Proposed Action is to rebuild 57.8 miles of the existing 59.7-mile long Keeler to Tillamook Transmission lines in Tillamook and Washington counties, Oregon. This rebuild would include 10.5 miles of the Keeler-Forest Grove No. 1 transmission line and 47.3 miles of the Forest Grove-Tillamook No. 1 transmission line.

BPA has prepared an environmental assessment (EA) evaluating the Proposed Action and the No Action Alternative. Based on the analysis in the EA, BPA has determined that the Proposed Action is not a major federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 et seq.). Therefore, the preparation of an environmental impact statement (EIS) is not required and BPA is issuing this Finding of No Significant Impact (FONSI) for the Proposed Action. The Proposed Action is not the type of action that normally requires preparation of an EIS and is not without precedent.

The comments received on the Preliminary EA and responses to the comments are included in the Final EA. The Final EA also identifies changes made to the Preliminary EA.

Attached is a Mitigation Action Plan that lists all the mitigation measures that BPA and its contractors are committed to implementing. The FONSI also includes a statement of findings on how the Proposed Action impacts wetlands and floodplains. Impacts to wetlands and floodplains would be avoided where possible and minimized by the mitigation measures included in the EA and Mitigation Action Plan where there is no practicable alternative.

Public Availability

The FONSI will be mailed directly to individuals who previously requested it, a notification of availability will be mailed to potentially affected parties, and the Final EA and FONSI will be posted on BPA's project Website www.bpa.gov/goto/keelertillamook.

Proposed Action

BPA proposes to rebuild the Keeler to Tillamook 115-kilovolt (kV) transmission lines between the cities of Hillsboro and Tillamook in Washington and Tillamook counties, Oregon. No major rebuild work has been done on the Keeler to Tillamook transmission lines since they were built in the 1950s. Most of the wood pole structures are at the end of their service life and are physically worn and structurally unsound in places. Based on the current condition of these lines, the wood pole structures and associated structure components need to be replaced to maintain reliable electrical service and to avoid safety risks to the public and transmission line workers. The approximately 58-mile long rebuild would include replacement of wood pole structures over 10 years in age, and would replace cross arms, cross braces, guy wires, anchors, insulator assemblies, switches, and overhead conductor. The Proposed

Action would also involve improvements to existing access roads and some new access road construction, as well as removal of danger trees outside the existing right-of-way (ROW).

The proposed construction would likely begin in April 2014 and continue through December 2014. Details of the Proposed Action are presented in Chapter 2 of the EA.

No Action Alternative

Under the No Action Alternative, BPA would not rebuild the transmission line and would continue to operate and maintain the existing transmission line in its current state. Construction activities associated with the Proposed Action would not occur. The line structures would likely continue to fail intermittently, the ability of BPA to provide reliable electric service to its customers in the area would be adversely affected, and the safety concerns that prompted this proposal for action would persist.

BPA would continue to attempt to maintain the existing lines as the aged wood poles and cross arms further deteriorate. Due to the condition of the lines, the No Action Alternative would likely result in more frequent maintenance activities within the corridor than under the Proposed Action. Given the poor condition of some of the roads, the road work proposed under the Proposed Action would likely occur as an operation and maintenance project in the future, independent of rebuilding the transmission line. Future operation and maintenance under the No Action Alternative would also involve removal of the danger trees identified in Appendix A of the EA.

Significance of Potential Impacts of the Proposed Action

To determine whether the Proposed Action has the potential to cause significant environmental effects, the potential impacts of this alternative on human and natural resources was evaluated and presented in Chapter 3 of the EA. The potential impacts associated with the Proposed Action are summarized below. To evaluate potential impacts from construction, operation, and maintenance activities, four impact levels were used – high, moderate, low, and no impact. These impact levels are based on the considerations of context and intensity defined in Council of Environmental Quality regulations (40 Code of Federal Regulations 1508.27). High impacts could be considered significant impacts, if not mitigated, while moderate and low impacts are not. The Proposed Action, with implementation of selected mitigation measures, would have no significant impacts.

The following discussion provides a summary of the Proposed Action's potential impacts and the reasons these impacts would not be significant.

Land Use, Recreation, and Transportation

Overall impacts to land use, recreation, and transportation would be low, except low to moderate impacts on short term construction disruption at certain recreation sites, as noted below.

- Most new transmission line structures would be replaced in the same location as the existing structures and land use would not change. Less than one acre (0.34 acre) of agricultural land would be converted to new access roads or new structure sites.
- Landowners who would have construction impacts in actively cultivated fields would be compensated for the loss of crops and field disturbance.

- Construction impacts in Tillamook State Forest would result from improvements to 19 miles of existing roads within the forest. These impacts would not result in the direct loss of recreational facilities.
- Rock Creek Powerline Park, Dorman Pond, and Gordon Faber Recreation Complex parking lots would have short term closures during tower placement. Construction related disturbances such as noise, dust, and visual distractions may temporarily disrupt recreationists.
- Traffic delays from increased construction traffic and temporary single-lane closures would have low impacts on access to recreational facilities because of their short duration.

Geology and Soils

Impacts to geology and soils would be low to moderate.

- Use of heavy equipment during construction and maintenance would result in soils compaction and soil disturbance that would increase the potential for erosion. Because disturbance would be localized and minimized with the implementation of Best Management Practices (BMPs), it would not significantly increase or permanently alter stormwater runoff.
- Several structures are located in areas with moderate to severe landslide potential. While future landslides have the potential to impact structures and access roads, potential impacts would be mitigated by implementing additional measures (e.g. anchors, guy wires, soil nailing, tower movement) where geotechnical review has indicated an area is susceptible to landslides.

Fish

Impacts to fish would be low to moderate

- Construction and maintenance activities could impact fish habitat if sediments from work areas reach streams. Use of BMPs would minimize or eliminate the delivery of sediments from pole replacement activities for these structures into nearby streams.
- Two bridges and three culvert installations/repairs would affect fish-bearing streams and would require in-water work. Installation of fish passage culverts could cause harm to fish through disturbance, injury, or mortality, but impacts would be minimized through fish-passage design and implementation of mitigation and conservation measures required by National Marine Fisheries Service (NMFS) and Oregon Department of Fish and Wildlife (ODFW).
- Removal of danger trees from riparian areas along fish-bearing streams has the potential to reduce both shade and future in stream fish habitat. Danger trees would be cut and roots would not be disturbed, causing low erosion impacts. The potential reduction in tree cover from danger tree removal would be small relative to the amount of cover along a particular stream corridor, resulting in little or no change to riparian function from current conditions.

Wildlife

Impacts on wildlife from habitat modification, degradation, or loss and disturbance of wildlife would be low to moderate.

- Construction and maintenance activities would result in temporary loss of vegetation in work areas but the degradation of wildlife habitat would be temporary and would generally occur within areas where vegetation is previously disturbed and managed on an ongoing basis.
- Approximately 1.13 miles of new unpaved access road would result in a loss of habitat, but this loss is not expected to adversely affect the survival of any wildlife species at the population level.

- Areas disturbed by construction and maintenance could result in degradation of wildlife habitat if those areas are invaded by noxious weeds. The potential impact would be mitigated through implementation of weed control BMPs included in the EA and Mitigation Action Plan (MAP). Degradation of habitat below existing conditions is not expected.
- Construction and maintenance activities would result in increased noise and activity levels, which could temporarily displace wildlife near work areas. Disturbance would be temporary and localized and levels would be expected to return to preexisting conditions after work is complete.
- Six wood pole structures would be replaced within spotted owl critical habitat and about 0.4 mile of access roads would be improved within 0.25 mile of documented home ranges. A total of 7 danger trees were identified within suitable habitat, which could affect foraging and dispersal. However, there are no suitable spotted owl nest trees within the managed ROW or suitable forest stands adjacent to the ROW that would provide suitable foraging and dispersal. Increased structure height may increase risk of collision and temporary construction noises could also disrupt the species. Construction noise would be intermittent and sporadic, but would not occur within the critical nesting period of March 1-July 7.
- Seven wood pole structures would be replaced within marbled murrelet critical habitat and a total of 21 danger trees were identified within recruitment and capable habitat. Eleven trees would be removed and the remainder would be side limbed, girdled, or topped to minimize impacts to these habitats. BPA would follow daily dawn/dusk timing restrictions during the marbled murrelet breeding period (April 1-September 15), and work would be restricted within 100 yards of occupied habitat during the critical breeding period (April 1-August 5)
- Potential habitat for streaked horned lark is present along the Keeler-Forest Grove No. 1 line, although there are no known records of the species in the project area. Additional measures to minimize impacts are being developed through the Endangered Species Act (ESA) consultation process with the U.S. Fish and Wildlife Service (USFWS).
- All known bald eagle nest sites are beyond 0.5 mile from any construction area. Disturbance is not expected because of the distance to these nests and the presence of vegetative screening between the construction sites and the nests.
- Based on surveys, Fender's blue butterfly potential habitat has been identified within the project area, though no evidence of the species was found, so it is unlikely that construction and maintenance would affect the species. Any measures identified during ESA consultation with USFWS to avoid or minimize impacts on habitat would be implemented as part of the Proposed Action.

Vegetation

In general, impacts to vegetation would be low. However, in some areas where danger tree removal would occur, impacts would be low to moderate.

- Structure replacement would remove or temporarily disturb up to 68.3 acres of vegetation, all within the existing managed ROW. To minimize disturbance in riparian areas, the disturbance area would be reduced and signage, fencing, or flagging would be used where needed to restrict vehicles and equipment.
- New road construction would require removal of existing herbaceous vegetation (2.5 acres), agricultural land (0.2 acre), and mixed coniferous forest communities (<0.1 acre). Temporary

vegetation clearing from road reconstruction and improvement would clear about 248.4 acres of low quality vegetation that has grown up within or along the edges of existing road beds.

- Two rare plant populations of Nelson's checker-mallow have been identified within the ROW where temporary travel routes may be used to cross between structures. Signage, fencing, or flagging would be installed to restrict vehicles and equipment in those areas. If complete avoidance is not possible, temporary transplanting would occur to minimize disturbance.
- An estimated 2,666 danger trees have been identified for removal along the ROW. Many of the trees were identified in coordination with Tillamook State Forest staff to address the presence of a root pathogen within stands of the Tillamook State Forest. In some places, opening up adjacent forested areas to increased light could make those areas more vulnerable to weed infestation, or could expose weaker trees to wind and susceptible to falling over. Existing understory and saplings would be expected to regrow in these areas quickly, a low to moderate impact.

Waterways, Water Quality, and Floodplains

Impacts on waterways, water quality, and floodplains would be low to moderate with implementation of BMPs and a Stormwater Pollution Prevention Plan (SWPPP). Both would include measures to reduce erosion and runoff, stabilize and reseed disturbed areas, and prevent and contain any accidental spills.

- Construction and maintenance activities that would increase turbidity, such as culvert installation and soils disturbance, would be temporary and localized. Temporary increases in turbidity would be minimized through the use of mitigation measures and BMPs.
- Construction of properly designed access roads would improve stormwater conveyance by directing the flow of surface water to vegetated areas where water could slowly infiltrate soils.
- Culvert and bridge work could have a direct long-term impact on water quality with the removal of stream bank vegetation and alteration of channel characteristics. Long-term indirect impacts to stream temperature and turbidity could also occur as a result of direct impacts. Implementation of mitigation measures and BMPs would minimize these impacts to low to moderate.
- Some danger tree removal would occur in riparian buffers, reducing structural diversity, increasing erosion and sediment, reducing bank stabilization, and reducing stream functions over the long term. Vegetation would be cut above ground and roots would be left in place to maintain bank stabilization and reduce erosion. Small shrubs and trees outside the existing ROW would be allowed to regrow.
- Forty-three wood pole structures would be replaced within mapped floodplains (Wilson River, Gales Creek, Lousignont Canal, Council Creek, Dairy Creek, and McKay Creek floodplains) and two structures would be moved outside of the Wilson River floodplain. A total of 1.32 miles of access roads would be reconstructed or improved within an existing floodplain (0.58 miles in Wilson River Floodplain, 0.12 miles within Gales Creek floodplain, 0.5 miles within Lousignont Canal floodplain, and 0.12 miles in Dairy Creek floodplain). Soil compaction, vegetation removal, and increased sedimentation within floodplains would be temporary and localized. Work within floodplains would minimally alter floodplain function and could alter flood storage capacity. With the implementation of mitigation measures, these impacts would be reduced.
- Approximately 78 danger trees would be removed within floodplains, but would not result in any erosion or alteration to floodplain function because trees would be cut with roots left intact.

- Impervious surfaces from new, reconstructed, and improved roads could reduce surface groundwater infiltration rates in localized areas, but would not reduce infiltration rates.

Wetlands

Impacts to wetlands would be low to moderate.

- Structure work in wetlands would temporarily disturb about 1.09 acres of wetland and would permanently disturb less than 0.01 acre of wetland. Reduction in the impact area around towers that are in wetlands to a 50 foot by 50 foot disturbance area would further reduce temporary wetland impacts.
- New road construction would occur within 0.04 acre of wetland buffer. Although there would be no direct impacts to wetlands, indirect impacts from sediment from the road would be a moderate impact to the adjacent wetland.
- Road reconstruction and improvements would occur within 20 wetlands and 14 wetland buffers, temporarily disturbing about 0.65 acre of wetland and 0.77 acre of wetland buffer. All road work would be limited to within the existing road prism, a low impact to wetland function and condition.
- Danger tree removal would occur within four wetlands and seven wetland buffers, directly impacting some wetland functions (e.g. carbon sequestration, wildlife habitat) and indirectly affecting water quality, fish and aquatic habitat, and the wetland's ability to withstand other impacts over the long term, a moderate impact.

Visual Resources

Temporary and permanent visual impacts would be low to moderate.

- Construction activities would temporarily detract from existing ROW viewsheds, particularly for area residents, recreationists, and motorists. Transmission line structures would be more visible from some residences due to increased structure height, a change in structure composition (e.g. from wood pole to steel pole), and more (temporarily) reflective conductor. These impacts would be low to moderate depending on the view of the residents and the proximity of homes to the transmission line.
- Removal of danger trees would generally occur in groups of less than 10 trees, and their removal could permanently alter viewsheds in the project area. Larger contiguous areas of tree and shrub removal, as well as removal of trees that may currently provide some level of vegetative screening, would change existing views for some viewers, particularly residential, recreational, and motorists along Highway 6. Vegetation that grows up to 10 feet mature height would be allowed to grow within the ROW. Depending on the proximity of homes to the ROW, long term impacts from danger tree removal would be low to moderate.
- Views of maintenance activities would be temporary and localized and would not result in any new impacts to visual resources.

Air Quality and Climate Change

Impacts on air quality would be low.

- Construction activities, including operation of heavy machines and equipment, would temporarily increase air pollution, dust, and particulate levels in localized areas, but this increase would be partially reduced by implementing dust control BMPs.

- Operation of the transmission line emits limited amounts of ozone as a result of the corona effect, a quantity generally too small to be measured or have an impact on humans, animals, or plants. Corona emissions would be similar to levels present under existing conditions.
- Greenhouse gas emissions from construction, operation, and maintenance activities over the life of the transmission line would be below U.S. Environmental Protection Agency (EPA) mandatory reporting threshold and would not represent a substantial change from current conditions.

Socioeconomics, Environmental Justice, and Public Services

Impacts on socioeconomics and, environmental justice, and public services would be low and some effects would be beneficial.

- The approximately 9 month construction period would not induce any permanent changes in the study area population or permanently affect economic activities in the area, although the rebuilt transmission line could contribute to regional stability and economic growth by reliably meeting power demands, a long-term beneficial effect.
- The number of workers (generally about 36) required to complete the Proposed Action would have a small effect on public services, roads, or utilities during construction.
- Temporary interference with agricultural and forestry operations along the ROW would occur during construction and intermittently during future operation and maintenance activities.

Cultural Resources

Impacts on cultural resources would be low to moderate.

- Construction and maintenance activities could result in some impacts on known and unknown cultural resources; those potential impacts would be low to moderate depending on the level and amount of disturbance and type of site.
- The Keeler-Forest Grove No. 1 and Forest Grove-Tillamook No. 1 transmission lines are eligible for listing in the National Register of Historic Places (NRHP). However, because the lines would be replaced in kind with no loss of functionality or integrity, there would be no effect on historic properties.

Noise, Public Health, and Safety

Noise impacts from construction and maintenance work would be low to moderate.

- Construction and maintenance activities would result in a temporary increase in ambient noise for some sensitive noise receptors; the level of impact would depend on the proximity to the noise receptors and level of noise disturbance.
- Operation of the rebuilt transmission line would continue at 115-kV. Noise levels would be slightly lower than under existing conditions and would continue to be compliant with applicable noise regulations.
- Health and safety risks associated with construction include increased risk of electrical shock or fires from high-voltage equipment and increased risk of fires and injury from the use of heavy equipment and hazardous materials near high-voltage lines. Standard construction safety procedures would be required to minimize safety risks.
- Although a small increase in electric fields is predicted within the ROW, this increase is small (0.1 kV/m) and would not occur outside the ROW. Because structure heights would generally increase, ground-level electric fields would decrease slightly within some portions of the ROW.

- A slight decrease in magnetic field (0.1 to 1.6 mG) is projected both within and outside of the ROW.
- The Proposed Action is expected to either not change or potentially reduce radio and television interference along the ROW.

Determination

Based on the information in the EA, as summarized here, BPA determines that the Proposed Action is not a major federal action significantly affecting the quality of the human environment within the meaning of NEPA (42 USC 4321 et seq.). Therefore, an EIS will not be prepared and BPA is issuing this FONSI for the Proposed Action.

Issued in Portland, Oregon.

/s/ Joseph Sharpe for
F. Lorraine Bodi
Vice President
Environment, Fish and Wildlife

February 6, 2014
Date

Keeler to Tillamook Transmission Line Rebuild Project Mitigation Action Plan

Mitigation Action Plan

This Mitigation Action Plan (MAP) is part of the Finding of No Significant Impact (FONSI) for the Keeler to Tillamook Transmission Line Rebuild Project. The project would rebuild 57.8 miles of the existing 59.7-mile long Keeler to Tillamook Transmission lines in Tillamook and Washington counties, Oregon. This rebuild would include 10.5 miles of the Keeler-Forest Grove No. 1 transmission line and 47.3 miles of the Forest Grove-Tillamook No. 1 transmission line.

This MAP is for the Proposed Action and includes all of the integral elements and measures referenced in the Environmental Assessment (EA) to mitigate any potential adverse environmental impacts.

The Bonneville Power Administration (BPA) and its contractor are responsible for implementing the mitigation measures during various phases of project construction. Relevant portions of this MAP will be included in the construction contract specifications. This will obligate the contractor to implement the mitigation measures identified in the MAP that relate to contractor responsibilities during construction and post-construction.

If you have any general questions about the project, contact the Project Manager, Richard Heredia: toll-free telephone 800-282-3713, direct telephone 360-619-6398, or e-mail rheredia@bpa.gov.

If you have questions about the MAP, contact the BPA lead for the environmental review, Claire McClory: toll-free telephone 800-282-3713, direct telephone 503-230-5922, or e-mail cdmccclory@bpa.gov.

If you have questions about the MAP during construction or post-construction, contact the BPA environmental lead for project implementation, Makary Hutson: toll-free telephone 800-282-3713, direct telephone 503-230-7667, or e-mail mahutson@bpa.gov.

This MAP may be amended if revisions are needed due to new information or if there are substantial project changes.

Consultation Related to Mitigation Measures

BPA sent a copy of the Preliminary EA to the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS), and the Oregon Department of Forestry's (ODF) Tillamook State Forest to review.

Several species under USFWS jurisdiction, the marbled murrelet, northern spotted owl, streaked horned lark, Kincaid's lupine, and Nelson's checker-mallow, which are listed as threatened under the Endangered Species Act (ESA), and Fender's blue butterfly, which is listed as endangered, may occur near the project area. About 0.04 acres of habitat removal will occur in a marbled murrelet designated Critical Habitat Unit as a result of the proposed action. Some minor habitat modification in Northern spotted owl critical habitat would take place as a result of the proposed action. Informal consultation was initiated with USFWS on January 10, 2013. The Biological Assessment (BA) concluded that implementation of the Proposed Action may affect but is not likely to adversely affect the species listed

above, and is not likely to adversely modify or destroy their habitat. BPA will follow any additional mitigation measures recommended by USFWS to minimize potential impacts to these species.

Two species under NMFS jurisdiction, the Upper Willamette River Distinct Population Segment (DPS) of steelhead and the Oregon Coast Evolutionarily Significant Unit (ESU) of coho salmon, are ESA-listed as threatened. The Proposed Action may affect but is not likely to adversely affect the species because all work would be done within the in-water work window for the species, there would be no reduction in cover and shading along streams that would be affected by the project, and replacement of existing culverts would improve fish passage. Further, the project is not likely to result in the destruction or adverse modification of critical habitat. Despite some short-term localized impacts to critical habitat, the long-term effects of the Proposed Action will likely improve critical habitat by reducing erosion and increasing access to spawning and rearing habitat. Informal consultation was initiated with NMFS on December 27, 2013.

A formal delineation of wetlands and waters of the U.S. was conducted in December 2012 and March 2013. Based on the analysis in this EA, the Proposed Action would have minimal permanent wetland impacts (less than 0.66 acre). BPA is coordinating with U.S. Army Corps of Engineers and the Oregon Department of State Lands regarding wetland permitting. The mitigation provided below would avoid or minimize potential effects on waters of the U.S. and waters of the State, and would be reflected in any permit.

As part of Section 106 of the National Historic Preservation Act (NHPA) consultation process, BPA identified and documented cultural resources in the project area and evaluated them for eligibility for listing in the National Register of Historic Places. BPA initiated consultation with the Confederated Tribes of the Siletz, the Confederated Tribes of the Grand Ronde, and the Oregon State Historic Preservation Office (SHPO) in October 2013. BPA then conducted a literature review in December 2012 to identify previously recorded archaeological sites. A cultural resources survey was conducted in the Proposed Action Area of Potential Effect in January, February, and June of 2013. BPA made findings of no adverse effect to any known cultural resources and presented the reports and findings to the affected tribes and Oregon SHPO. The Oregon SHPO concurred on November 27, 2013. The mitigation measures prescribed for cultural resources below include measures intended to minimize impacts on unknown cultural resources, should they be discovered during construction of the Proposed Action.

Mitigation Measures

Minimization and mitigation measures have been identified to avoid or reduce potential impacts associated with the Proposed Action, and are provided below in Table 1. Timing restrictions for project construction are provided in Table 2.

Table 1. Mitigation Action Plan

Environmental Resource	Mitigation
Land Use, Recreation, Transportation	<ul style="list-style-type: none"> • Plan and conduct construction activities to minimize temporary disturbance, displacement of crops, and interference with agricultural activities. • Install barriers, gates, and postings at appropriate access points and, at the landowner's request, to minimize or eliminate public access to project facilities. • Contact and provide a schedule of construction activities to all potentially affected landowners.

Environmental Resource	Mitigation
	<ul style="list-style-type: none"> • Compensate landowners for damage to property or crops, as appropriate. • Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements. • Limit ground-disturbing activities to designated work areas, including structure sites, access roads, pulling/tensioning sites, and staging areas. As needed, stake or flag water resources, wetlands, or other sensitive areas prior to construction to avoid impacts. • Use BMPs to limit erosion and the spread of noxious weeds. • Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner. • Restore compacted cropland soils as closely as possible to pre-construction conditions using tillage. • Remove and stockpile topsoil separately in croplands. Where select backfill is used around tower poles, cover in native topsoil to the extent possible. • Revegetate disturbed areas after construction, with the exception of those areas required to remain clear of vegetation to ensure the safety of the transmission line and access to structures. • Coordinate the routing and scheduling of construction traffic with the Oregon Department of Transportation (ODOT) and county/municipal road staff. • Coordinate construction activities and timing with ODF staff to ensure that recreation users are minimally affected during peak seasons. • Employ traffic-control flaggers and post signs warning of construction activity and merging traffic for short interruptions of traffic as necessary during construction. • Conduct noise-generating construction activities only during normal daytime hours (i.e., between the hours of 7:00 a.m. to 5:00 p.m. Monday to Friday, and 8:00 a.m. to 5:00 p.m. Saturday), to the extent possible.
Geology and Soils	<ul style="list-style-type: none"> • Restore compacted cropland soils as closely as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding. • Remove and stockpile topsoil separately in croplands. Where select backfill is used around tower poles, cover in native topsoil to the extent possible. • Avoid and minimize construction on steep or unstable slopes, if possible. • Locate structures or access roads outside of previously active landslides, or other geologic hazard areas, where possible. • Contact BPA geotechnical specialists if geotechnical issues, such as new landslides, arise during construction. • Conduct peak construction activities during the dry season (between June 1 and November 1), as much as possible, to minimize erosion, sedimentation, and soil compaction. • Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to control erosion and sedimentation. • Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement where the potential exists for construction activities to impact surface water or wetlands. • Design temporary and permanent access roads to control runoff and prevent erosion by using low grades, drain dips, water bars, etc., or a combination of these methods. • Where existing roads show signs of slumping or erosion, reinforce roads during reconstruction. • Retain existing low-growing vegetation where possible, and minimize the use of clearing/grubbing

Environmental Resource	Mitigation
	<p>to preserve the roots of low-lying vegetation.</p> <ul style="list-style-type: none"> • Use BMPs to limit erosion and the spread of noxious weeds. • Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas • Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions. • Locate staging areas in previously disturbed or gravelled areas where practicable. • Use local rock sources for road construction where practicable.
Fish	<ul style="list-style-type: none"> • Design and construct culverts or bridges for access roads in a manner that allows fish passage. • Prepare and implement Spill Prevention and Response Procedures (SPRP). • Prepare and implement an SWPPP to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act (CWA) (33 U.S.C. 1251 <i>et seq.</i>) for the construction site operator's activities. • Install BMPs properly to minimize or eliminate the delivery of sediments from pole replacement activities into nearby streams. • Conduct all construction activities in fish-bearing streams according to Oregon Department of Fish and Wildlife (ODFW) and NMFS in-water work guidelines or approved in-water work extension for streams identified as having ESA-listed fish species. • Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS and Record of Decision (DOE/EIS-0285; BPA 2000¹) and label recommendations. • Retain existing low-growing vegetation where possible. • Maintain erosion controls near water bodies. • Cease project construction near stream courses under high flow conditions. • Isolate in-stream work areas from surface waters to prevent sediment-laden water from impacting waters outside the work area and to protect fish resources. • Dewater identified in-water work areas and relocate fish outside of the construction zone before in-water work begins. NMFS and ODFW shall be notified in case of fish kills. • Screen all pump intakes and operate and maintain according to fish screen criteria (ODFW 2006; NMFS 1995, 1996). • Remove fish from in-water work area prior to dewatering and release to suitable habitat as near to the capture site as possible. • Handle all fish with extreme care, keeping fish in the water to the maximum extent possible during seining and transfer.
Wildlife	<ul style="list-style-type: none"> • Complete consultation with USFWS prior to construction to ensure that appropriate mitigation measures are implemented to protect listed species that potentially occur in the ROW. • Observe daily restrictions within the northern spotted owl critical habitat during the critical and late nesting periods from March 1 to September 30, during which construction activities would not begin until 2 hours after sunrise and would end 2 hours before sunset. • Observe daily restrictions within marbled murrelet critical habitat and in occupied stands during the breeding period from April 1 to September 15, where activities would not begin until 2 hours after

¹ See Chapter 7 (References) of the Keeler to Tillamook Transmission Line Rebuild Project Draft Environmental Assessment for citations used in the Mitigation Action Plan for the Final Environmental Assessment.

Environmental Resource	Mitigation
	<p>sunrise and would end 2 hours before sunset.</p> <ul style="list-style-type: none"> • Seasonal restrictions include avoiding road maintenance on less-traveled roads, the use of chainsaws or heavy equipment, and other activities that may disturb nesting northern spotted owls during the critical nesting period from March 1 to July 7, or may disturb nesting marbled murrelets during the critical nesting period from April 1 to August 5. Road maintenance on well-traveled roads is not restricted. • Conduct site restoration as soon as possible following construction; grade disturbed areas to match surrounding topography; and plant with suitable native vegetation during the appropriate season. • Identify active raptor nest sites by consulting with ODFW and/or the USFWS and conduct raptor nesting surveys, if required. • Mark the rebuilt transmission line with bird flight diverters over any major water bodies (such as the Wilson River) that may be a potential flyway for migratory bird species (waterfowl) where appropriate. • Avoid disruptive construction activities within 330 feet of active bald eagle nests during eagle critical nesting period (January–June). However, the closest known nest is more than 0.5 mile away from the ROW. • Conduct pre-construction surveys for nesting streaked horned larks in suitable nesting habitat. • Schedule danger tree removal between August 15 and March 1 to avoid or minimize impacts on migratory birds. • Conduct nesting bird pre-construction surveys prior to danger tree removal. • Leave small portions of cut and felled danger trees in upland and wetland areas as additional habitat/structure for wildlife, particularly small mammals and amphibians, where appropriate. • Top, trim, or girdle danger trees to create snags where practical (e.g., in higher quality habitat areas) to reduce impacts on wildlife species, such as small mammals, reptiles, and amphibians. • Minimize and avoid unnecessary ground-disturbance and clearing activities, particularly in sensitive habitats. • Use maps, flagging, and/or signs to identify sensitive areas (e.g., wetlands) prior to construction so that construction crews can avoid unintentional impacts on wildlife habitat. • Retain existing low-growing vegetation where possible, and minimize the use of clearing/grubbing to preserve the roots of low-lying vegetation. • Avoid snag and large tree removal to the extent possible. • Ensure that all equipment has standard sound-control devices. • Conduct noise-generating construction activities only during normal daytime hours (i.e., between 7:00 a.m. and 7:00 p.m.) to the extent possible and in accordance with any timing restrictions for ESA-listed wildlife. • Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans.
Vegetation	<ul style="list-style-type: none"> • Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance, where practicable. • Wash equipment and vehicles before entering construction areas. • Restrict construction activities to the area needed to work effectively to limit the disturbance of native plant communities and to prevent the expansion of noxious weed species. • Minimize chip, sawdust, or brush accumulation in the ROW, and haul these materials out, if

Environmental Resource	Mitigation
	<p>possible.</p> <ul style="list-style-type: none"> • Limit the disturbance area to 50 feet by 50 feet when work is required in riparian zones where practicable. • Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas following the completion of construction activities. • If special-status plant species are identified during follow-up surveys, develop appropriate avoidance measures to the extent possible. If avoidance is not possible, temporary transplanting may occur. • Temporary transplanting of rare plants would involve the removal of all plants from the travel way and stockpiling them in a designated area. Plants would be removed in blocks of earth to protect the roots and stored in appropriately sized containers. After construction activities are complete and equipment has been removed from the area, the plants would be replaced to the original location. Supplemental watering by hand may be necessary during stockpiling and to facilitate reestablishment after transplanting. • Identify noxious weed populations for construction crews so these populations can be avoided when possible. Cooperate with private, county, state, and federal landowners to reduce the introduction and spread of noxious weeds, including locating vehicle wash or blow stations as appropriate to avoid the spread of noxious weeds. • Stockpile topsoil excavated during structure and temporary spur road construction and use on-site for contouring and restoration, where possible. • Use weed-free straw, hydromulch, or similar ground cover for erosion control during construction and restoration activities in areas that cannot be revegetated immediately. • Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS and Record of Decision (DOE/EIS-0285; BPA 2000) and label recommendations to ensure protection of surface water, ecological integrity, and public health and safety. • Retain existing low-growing vegetation where possible to prevent sediment movement off site, and minimize the use of clearing/grubbing to preserve the roots of low-lying vegetation. • Avoid snag and large tree removal to the extent possible. • Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions. • Limit ground-disturbing activities to designated work areas. • Promote native vegetation in the ROW by leaving low-growing species undisturbed within the 100-foot-wide ROW, where it would not interfere with the safe operation of the transmission line. • Restore compacted cropland soils as closely as possible to pre-construction conditions using tillage and stockpiling topsoil separately during excavation. Where select backfill is used around tower poles, cover in native topsoil to the extent possible. • Design temporary and permanent access roads to control runoff and prevent erosion by using low grades, drain dips, water bars, etc., or a combination of these methods. • Minimize the project ground disturbance footprint, particularly in sensitive areas. • Consult with the appropriate federal or state land management agency (e.g., ODF) concerning any special-status species. • Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans.

Environmental Resource	Mitigation
Waterways, Water Quality, and Floodplains	<ul style="list-style-type: none"> • Avoid siting new structures and access roads within 100 feet of surface waters during the design process, where possible. • Locate tensioning sites at least 100 feet away from surface waters, where possible. • Design and construct access roads to minimize drainage from the road surface directly into surface waters, size new and replacement culverts large enough to accommodate predicted flows, and size and space cross drains and water bars properly to accommodate flows and direct sediment laden waters into vegetated areas. • Obtain required permits associated with working in or near floodplains and waterways, and work with regulatory agencies to develop appropriate mitigation. • Review required BMPs, water quality mitigation measures, and other permit requirements with construction contractors and inspectors during a pre-construction meeting covering environmental requirements. • Conduct construction activities during the dry season (between June 1 and November 1), as much as possible, to minimize erosion, sedimentation, and soil compaction. • Minimize disturbance to streams and stream buffers by reducing the disturbance area for work associated with structures to 50 feet by 50 feet per structure (approximately 0.06 acre) where possible. Install signage, fences, and flagging where needed to restrict vehicles and equipment to designated routes outside of streams. • Prepare and implement SPRP. • Delineate construction limits within 100 feet of streams, other water bodies, wetlands, and floodplains, as specified in the SWPPP, with a sediment fence, straw wattles, or a similarly approved method to eliminate sediment discharge into waterways; minimize the size of construction disturbance areas; and minimize the removal of vegetation, to the greatest extent possible. • Restrict refueling and servicing operations to locations where any spilled material cannot enter natural or human-made drainage conveyances (e.g., ditches, catch basins, ponds, wetlands, streams, and pipes) and use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles. • Store, fuel, and maintain vehicles and equipment in designated vehicle staging areas located a minimum of 100 feet away from any stream or water body. • Power wash all vehicles and equipment at an approved cleaning facility prior to entering construction work areas to remove any residual sediment, petroleum, or other contaminants; inspect equipment and tanks on a weekly basis for drips or leaks and promptly make necessary repairs. • Check all equipment used for instream work for leaks, and, prior to entering waterways, completely clean off any external petroleum products, hydraulic fluid, coolants, and other pollutants. • Prohibit sidcasting of road grading materials along roads within 100 feet of perennial streams. • Reseed disturbed areas after construction activities are complete, at the appropriate time period for germination, with a native seed mix, a seed mix recommended by ODFW, or as agreed upon with landowners for use on their property. • Revegetate disturbed areas in stream buffers following specific revegetation guidelines in permits. Use native species for revegetation in wetlands that are not in agricultural areas, and reseed pastures with an appropriate seed mix. • Inspect and maintain access roads, culverts, and other facilities after construction to ensure proper function and nominal erosion levels. • Limit ground-disturbing activities to designated work areas, including structure sites, access roads,

Environmental Resource	Mitigation
	<p>pulling/tensioning sites, and staging areas.</p> <ul style="list-style-type: none"> • Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions. • Install sediment barriers and other suitable erosion and runoff control devices. • Provide spill prevention kits at designated locations on the project site.
Wetlands	<ul style="list-style-type: none"> • Avoid siting new structures and access roads within 100 feet of wetlands during the final design process, where possible. • Locate tensioning sites at least 100 feet away from wetlands and other water bodies, where possible. • Design and construct access roads to minimize drainage from the road surface directly into wetlands, size new and replacement culverts large enough to accommodate predicted flows, and size and space cross drains and water bars properly to accommodate flows and direct sediment laden waters into vegetated areas. • Obtain required permits associated with working in or near wetlands and work with regulatory agencies to develop appropriate mitigation for wetland impacts according to federal, state, and local permit requirements. • Conduct peak construction activities during the dry season (between June 1 and November 1), as much as possible, to minimize erosion, sedimentation, and soil compaction. • Minimize disturbance to wetlands and wetland buffers by reducing the disturbance area for work associated with structures to 50 feet by 50 feet per structure (approximately 0.06 acre) where possible. Install signage, fences, and flagging where needed to restrict vehicles and equipment to designated routes outside of wetlands. • Delineate construction limits within 100 feet of wetlands and other water bodies, as specified in the SWPPP. • Inspect erosion and sediment controls. • Avoid depositing excavated material into wetlands during structure construction, remove all excavated material from the wetland, except as allowed by permit, and stabilize the removed fill in an upland area. • Check all equipment used for instream work for leaks prior to entering waterways. • Prohibit discharge of vehicle wash water into any wetland without pretreatment to meet state water quality standards. • Reseed disturbed areas after construction activities are complete. • Revegetate disturbed areas in wetlands and wetland buffers following specific revegetation guidelines in permits. Use native species for revegetation in wetlands that are not in agricultural areas, and reseed pastures with an appropriate seed mix. • Identify wetlands and other sensitive areas prior to initiating construction.
Visual Resources	<ul style="list-style-type: none"> • Perform construction work during daylight hours to avoid noise and the use of nighttime illumination of work areas, to the extent possible. • Utilize non-specular (non-reflective) finish on transmission lines, insulators, and other hardware to reduce reflection. • Avoid storing construction equipment and supplies on residential streets or access roads directly adjacent to residential property, to the greatest extent possible. • Implement construction site maintenance and clean-up and keep construction areas free of debris. • Incorporate BMPs for the control of erosion and dust associated with the construction of access roads to minimize visual impacts on nearby residential viewers.

Environmental Resource	Mitigation
	<ul style="list-style-type: none"> • Leave plants less than 10 feet in height undisturbed within the 100-foot-wide ROW (where they would not interfere with the safe operation of the transmission line) to reduce the effect of the cleared ROW on visual resources. • Reseed disturbed, non-farmed areas once construction is complete using a predominantly native seed mix or a seed mix agreed upon with landowners. Periodically inspect reseeded sites to verify adequate growth. If necessary, implement contingency measures to ensure adequate growth and vegetation cover. • Locate construction staging areas away from sensitive viewers as much as possible. • Require contractors to maintain clean construction sites. • Use similar color palette for steel poles as wood poles, and treat poles to reduce reflectivity (steel pole replacement).
Air Quality and Climate Change	<ul style="list-style-type: none"> • Encourage construction vehicles to travel at low speeds on access roads and construction sites to minimize dust. • Encourage construction crews to shut down idling construction equipment, if feasible. • Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites. • Recycle or salvage non-hazardous construction and demolition debris, if possible. • Use local rock sources for road construction, if possible. • Prepare a Fugitive Dust Control Plan. • Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas and thus help manage dust that may result from exposed soils. • Limit the time soils are left exposed. • Use water trucks or other dust control measures to control dust during construction where soil is exposed. • Encourage contractor to maintain all vehicle engines in good operating condition to minimize exhaust emissions.
Socioeconomics, Environmental Justice, and Public Services	<ul style="list-style-type: none"> • Compensate landowners for any damage to crops or property during construction or operation and maintenance activities, as appropriate. • Plan and conduct construction activities to minimize interference with agricultural activities. • Use local rock sources for road construction, if possible.
Cultural Resources	<ul style="list-style-type: none"> • Minimize construction near isolates and site 35WN80. • Implement BPA's Inadvertent Discovery Protocol. This procedure provides that should ground-disturbing activities reveal any cultural materials (e.g., structural remains, Euro-American artifacts, or Native American artifacts), all activities in the vicinity of the find would cease. The BPA archaeologist, the Oregon SHPO, and affected tribes would be notified immediately. The Inadvertent Discovery Procedure would also require crews to cease construction immediately within 200 feet of any human remains, suspected human remains, or any items suspected to be related to a human burial (i.e., funerary items, sacred objects, or objects of cultural patrimony) encountered during construction. The area around the discovery would be secured and the Tillamook or Washington County Sheriff, BPA archaeologist, the SHPO, and the affected tribes would be contacted immediately. • Avoid the Gravelle Brother's Trail segment by marking avoidance areas in the field with flagging tape so construction crews know to avoid the area.

Environmental Resource	Mitigation
Noise, Public Health, and Safety	<ul style="list-style-type: none"> • Provide a schedule of construction activities to all landowners who could be affected by construction. • Locate equipment as far away as is practical from noise-sensitive uses. • Ensure that all equipment has standard sound-control devices. • Conduct noise-generating construction activities only during normal daytime hours (i.e., between the hours of 7:00 a.m. to 5:00 p.m. Monday to Friday, and 8:00 a.m. to 5:00 p.m. Saturday), to the extent possible. • Shut down idling construction equipment, if feasible. • Prepare and implement SPRP to avoid and contain accidental spills, including notification assessment, security, clean-up, and reporting requirements. Implement BMPs to ensure that all harmful materials are stored, contained, and disposed of properly. • Provide spill prevention kits at designated locations on the project site and where hazardous materials are stored. • Inspect equipment daily for potential leaks. • Initiate discussions with local fire districts prior to construction and work with the districts and other appropriate emergency response entities to develop appropriate fire and emergency response plans. • Construct and operate the rebuilt transmission line according to the National Electric Safety Code guidelines. • Restore reception quality if radio or television interference occurs as a result of rebuilding the transmission line so that reception is as good as or better than before the interference. • Install barriers, gates, and postings at appropriate access points. • Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS and Record of Decision (DOE/EIS-0285; BPA 2000) and label recommendations. • Cease project construction near stream courses under high flow conditions. • Hold crew safety meetings at the start of each workday to review hazards associated with the job, work procedures, special precautions, and other potential safety issues. • Secure the site as much as possible at the end of each workday to protect equipment and the general public. • Comply with all fire safety laws, rules, and regulations of the State of Oregon and prepare a fire prevention and suppression plan to meet BPA, local authority, and land manager requirements. • Notify the BPA Contracting Officer's Technical Representative immediately if a hazardous material is discovered that could pose an immediate threat to human health or the environment, and stop work in that area until the site is properly cleaned up. • Ground fences and other metal structures on and near the transmission line corridor during construction to limit the potential for shocks.

Table 2. Construction Timing Restrictions and Locations

Location/ Structures	Category of Restriction	Work Description	Timing Restriction Description
41/4-42/2	Marbled murrelet and northern spotted owl protection in critical habitat	All work	<ul style="list-style-type: none"> • No work can be performed between April 1 and August 5. • No tree clearing is allowed between March 1 through September 30. Conduct work from 2 hours after sunrise to 2 hours before sunset, from August 6 through September 15. • Work can be performed without restrictions between September 16 through March 31.
41/3, 42/3	Marbled murrelet and northern spotted owl protection in critical habitat	All work	<ul style="list-style-type: none"> • No tree clearing is allowed between March 1 through September 30. • Conduct work from 2 hours after sunrise to 2 hours before sunset, from April 1 through September 15. • Work can be performed without restriction between September 16 through March 31.
Tualatin River Tributaries	Timing of in-water work to protect fish	All work within the active channel of a flowing stream.	<ul style="list-style-type: none"> • In water work window July 5 through September 30 unless extended by ODFW and NMFS.
Wilson River and tributaries	Timing of in-water work to protect fish	All work within the active channel of a flowing stream	<ul style="list-style-type: none"> • In water work window July 1 through September 15 unless extended by ODFW and NMFS.