

**Bonneville Power Administration's  
Big Eddy-Knight Transmission Project  
Record of Decision**

September 2011

## **Decision**

The Bonneville Power Administration (BPA) has decided to construct the Big Eddy-Knight Transmission Project in Wasco County, Oregon and Klickitat County, Washington. As described in the Big Eddy-Knight Transmission Project Final Environmental Impact Statement (EIS) (DOE/EIS-0421, July 2011), this project consists primarily of constructing a new, approximately 28-mile-long, 500-kilovolt (kV) transmission line and ancillary facilities between BPA's existing Big Eddy Substation in The Dalles, Oregon, to a proposed new Knight Substation that will be connected to an existing BPA line about 4 miles northwest of Goldendale, Washington. For the transmission line, BPA has decided to build East Alternative Option 3, which was identified in the final EIS as the preferred alternative for the transmission line route. For the first 14 miles, the line will use double-circuit towers (combining the new line and an existing line on one set of towers) mostly on existing right-of-way. The remaining 14 miles of the new line will be built with single-circuit towers in newly-established transmission line right-of-way. BPA has also decided to build the small (about 1 mile) realignment of the East Alternative on the Oregon side of the Columbia River, as described in the final EIS. For the proposed new Knight Substation, BPA has decided to build Knight Substation on Site 1, which is on private property about 0.5 mile west of Knight Road. For the fiber optic cable necessary for system communications, BPA has decided to build the Loop Back Option, which will string fiber optic cable on the new transmission towers from BPA's Big Eddy Substation to the new Knight Substation and back again. The project also includes new equipment at BPA's existing Big Eddy and Wautoma substations.

## **Background**

BPA is a federal agency in the Pacific Northwest that owns and operates about three-fourths of the high-voltage transmission lines in the region. Consistent with BPA's Open Access Transmission Tariff, BPA accepts requests for transmission service in a transmission service request queue. BPA has an obligation to ensure it has sufficient transfer capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act (16 U.S.C. § 838b) directs BPA to construct transmission system improvements, additions, and replacements determined necessary by the BPA Administrator in order to provide service to BPA's customers, integrate and transmit power, and maintain electrical stability and reliability.

Construction of the Big Eddy-Knight Transmission Project will accommodate long-term firm transmission requests that BPA has received to move power across this portion of its system. In 2008, BPA conducted its first Federal Energy Regulatory Commission-approved Network Open Season (NOS) process to help manage the transmission service requests in its queue. During the 2008 NOS, utilities, power generators (including wind generators), power marketers,

and others were asked to resubmit their requests for use of BPA's transmission system. As a result, BPA received requests for about 1,150 megawatts (MW) of new long-term firm transmission service through the project area. BPA has since received additional requests for transmission service in this area through the 2009 and 2010 NOS processes.

There is insufficient transfer capability on the existing 500-kV transmission system in this area to accommodate the NOS requests. The Big Eddy-Knight transmission line will accommodate the transmission service requests by increasing BPA's 500-kV transmission capability to move power from the east side of the Cascade Mountains (along the Oregon/Washington border) to load centers (such as Portland, Oregon) on the west side of the Cascades and to major transmission lines serving California.

## **The Selected Alternative**

As indicated above, BPA has decided to build the proposed project and has selected one of the alternatives considered in the final EIS. BPA has also decided to implement certain options for various project components that were identified in the final EIS. The following describes the selected alternative and options in more detail.

### ***Transmission Line: East Alternative Option 3***

The East Alternative Option 3 was identified as BPA's preferred alternative for the transmission line route in both the draft and final EIS.

The line will begin at Big Eddy Substation and will run for about 9 miles—east then north across the Columbia River—to Wishram, Washington, essentially following the route of BPA's existing Harvalum-Big Eddy 230-kV single-circuit transmission line. The line will cross the Columbia River at an existing BPA transmission line crossing just west of the Burlington Northern Santa Fe railroad bridge and continue north over State Route (SR) 14. In this 9-mile section, the existing Harvalum-Big Eddy 230-kV line will be rebuilt with double-circuit 500-kV towers that will carry both the Harvalum-Big Eddy 230-kV line and the new Big Eddy-Knight 500-kV line. The line will be built within the existing BPA right-of-way easement for the Harvalum-Big Eddy line except for a 1-mile section in Oregon just before the Columbia River crossing. In this area, the line will be built, at its farthest point, about 800 feet to the west of the existing right-of-way and angle back into the existing corridor on the Washington side of the Columbia River. Through this 1-mile section, the existing right-of-way will be abandoned, the easement relinquished, and the existing towers and roads removed. The vacated land will then be restored.

At the intersection with the existing BPA McNary-Ross 345-kV line just north of Wishram, Washington, the new transmission line will run east for about 5 miles along the Columbia Hills north of SR-14, following the Harvalum-Big Eddy 230-kV and McNary-Ross 345-kV transmission line corridor. In this 5-mile section, the existing McNary-Ross towers will be removed and rebuilt in existing right-of-way with double-circuit 500-kV towers that will carry both the McNary-Ross 345-kV line and the new Big Eddy-Knight 500-kV line.

Near the Maryhill Museum of Art and the Windy Point Wind Energy Project, the new transmission line will leave the Harvalum-Big Eddy and McNary-Ross corridor and turn north.

The next 14 miles of line will be built on single-circuit towers in new right-of-way. It will cross over the Columbia Hills and continue north through the central and northern portions of the Klickitat Plateau to the new Knight Substation. BPA will acquire new 150-foot-wide right-of-way for this portion of the new line.

BPA will install about 134 new lattice-steel transmission towers that will have an average span length between towers of about 1,200 feet. The double-circuit towers that will be used for the first 14 miles will range in height from about 170–250 feet tall; the single-circuit towers that will be used for the last 14 miles will be about 108–200 feet tall. The towers on either side of the Columbia River will be about 407 feet tall on the Oregon side and 232 feet tall on the Washington side.

The conductor, fiber optic cable, and overhead ground wire for the new transmission line will be placed on these towers. Marker balls will be placed on the overhead ground wire across the Columbia River and bird diverters will be installed on overhead ground wire at select locations. The towers on either side of the Columbia River will have lighting for aircraft safety. Road construction will include about 16 miles of new road, 9 miles of temporary road, 13 miles of existing road improvements, and 62 culverts in intermittent streams (many stream crossings will have more than 1 culvert). In addition, portions of county roads that will be used to access the line route will be improved as necessary.

The East Alternative will mostly cross private land, both in new and existing rights-of-way. The line will also cross individual Indian allotments of members of the Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs Tribe) and the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), and a parcel owned by the U.S. Forest Service (USFS), all within existing right-of-way. In addition, the line will cross a parcel owned by the Washington Department of Natural Resources (DNR) using new right-of-way. About 7.5 miles of the line will be in the Columbia River Gorge National Scenic Area, but will be in existing right-of-way through this area except for the 1-mile section in Oregon where the right-of-way will be moved.

To reliably integrate the new transmission line into BPA's transmission system, new 500-kV equipment will be installed within the existing fenced 500-kV electrical yard of Big Eddy Substation. In addition, BPA's existing Wautoma Substation will be expanded by 1 acre on BPA property to house new electrical equipment that will support and enhance the system with the addition of the Big Eddy-Knight line and Knight Substation.

### ***Knight Substation: Site 1***

Knight Substation will be built on Site 1, an 80-acre parcel about 0.5 mile west of Knight Road under the transmission line corridor that contains BPA's Wautoma-Ostrander 500-kV and North Bonneville-Midway 230-kV lines. Site 1 was identified as BPA's preferred alternative for Knight Substation in the final EIS.

The substation will be a fenced 22-acre facility with three electrical bays, a 170-foot by 49-foot concrete-block control house, a storm water retention pond (about 1 acre), and electrical station service from Klickitat County Public Utility District (PUD) via a wood-pole distribution

line (about 2 miles long from Pine Forest Road). Soil excavated for the substation will be spread on about 19 acres of the parcel just north of the substation. The soil will be contoured, covered with excavated topsoil saved during construction, and reseeded.

Overhead ground wire and counterpoise will be installed on BPA's Wautoma-Ostrander line for about 1 mile on either side of Knight Substation.

To access Knight Substation for construction, BPA will build a temporary access road from Hill Road and along BPA's Wautoma-Ostrander right-of-way to Knight Substation. In addition, portions of Hill Road and Fish Hatchery Road will be improved. The temporary road will be used until a permanent access road, which will be used for long-term substation operations and maintenance, is built from Knight Road to the substation. Once the permanent access road is established, the temporary access road from Hill Road will be removed and the lands restored.

### ***Fiber Optic Cable: Loop Back Option***

The fiber optic cable will be strung on the Big Eddy-Knight towers from Big Eddy Substation to Knight Substation and back to Big Eddy Substation. Counterpoise (which takes any lightning charge from the overhead ground wire and dissipates it into the earth) will be buried in the ground at selected towers. The Loop Back Option was not identified as BPA's preferred fiber optic cable option in the final EIS; the Wautoma Option was the identified preferred option.

### **Other Alternatives Considered in Detail**

BPA also considered in detail different routing alternatives and a variety of options for various components of the proposed transmission line. In addition to different tower type and right-of-way options for the East Alternative, BPA considered a West Alternative and a Middle Alternative, each with multiple tower type and right-of-way options. BPA also considered another site for the new Knight Substation (Site 2), and a different design option for the new fiber optic cable (the Wautoma Option). BPA also considered a No Action Alternative. The following further describes these alternatives and options.

### ***East Alternative***

The East Alternative had three tower configuration options. As discussed above, East Option 3 was selected for implementation as part of the decision to construct the proposed project. The following options were also considered.

**East Option 1.** This option would have been a single-circuit line for the entire length, paralleling existing lines as described for the chosen East Alternative. It would have required new 150-foot wide right-of-way except in two places: 1) a 9-mile portion along the Harvalum-Big Eddy 230-kV line where it would have been on existing right-of-way, but would have required an additional 12.5-foot width of right-of-way; and 2) a 5-mile portion along the McNary-Ross 345-kV line where it would have been on existing right-of-way.

**East Option 2.** This option would have been the same as East Option 1, except for a 7-mile section within the National Scenic Area boundary. In this section, the line would have been built with double-circuit towers to carry both the existing and Big Eddy-Knight line, portions of

the Harvalum-Big Eddy 230-kV and McNary-Ross 345-kV lines would have been removed, and no new right-of-way would have been needed.

### ***West Alternative***

The West Alternative would have included work at the Big Eddy and Wautoma substations as described for the East Alternative. The transmission line would have extended north from Big Eddy Substation within vacant BPA right-of-way to the Columbia River. The route would then have crossed the river and headed west and then north, paralleling BPA's existing Spearfish Tap 115-kV wood-pole transmission line for about 1 mile. The route would then have angled northeast along BPA's existing Chenoweth-Goldendale 115-kV wood-pole line for about 12 miles to a point just south of the Little Klickitat River. At this point, the West Alternative would have turned east and continued to follow the Chenoweth-Goldendale line for about 1 mile before separating from that line and veering north to connect with either proposed Knight Substation site. This alternative was about 27 miles long.

The West Alternative would have mostly crossed private land, but would have also crossed the Columbia Hills State Park, the Columbia Hills Nature Preserve, Washington State Fish and Wildlife land, and DNR land. About 9.5 miles of the line would have been within the National Scenic Area: in this area, 5 miles of the line would have been located next to existing BPA transmission lines and about 4.5 miles of new transmission line corridor would have been created.

The West Alternative had the following six tower configuration options:

**West Option 1.** This option would have been a single-circuit line for the entire length, paralleling existing lines as described above. It would have required new 150-foot-wide right-of-way except in two places: 1) a 2-mile section from Big Eddy Substation to the Columbia River that would have used an existing vacant 125-foot-wide right-of-way, requiring an additional 25-foot width of right-of-way; and 2) a 1-mile section that would have used existing right-of-way adjacent to BPA's Spearfish Tap 115-kV wood-pole line.

**West Option 2.** This option would have been the same as West Option 1, except that a 17-mile section along BPA's Chenoweth-Goldendale 115-kV wood-pole line would have been built with double-circuit towers. The existing line would have been removed and placed on the double-circuit towers along with the Big Eddy-Knight line. This portion of line would have been built in the existing 100-foot-wide right-of-way, requiring an additional 50-foot width of right-of-way.

**West Option 3.** This option would have been the same as West Option 2, except that the 17-mile section along the Chenoweth-Goldendale line would have been built with single-circuit towers to only carry the Big Eddy-Knight line. BPA would have removed the Chenoweth-Goldendale 115-kV line from service and would have worked with Klickitat County PUD regarding possible operation impacts due to the line removal. As with West Option 2, an additional 50-foot width of right-of-way would have been required for this 17-mile section of line.

**West Option 4.** This option would have been the same as West Option 1 (single-circuit towers parallel to existing lines), except that the first 5 miles, from Big Eddy Substation to the end of

Spearfish Tap, would have been built with double-circuit towers to accommodate a possible future line through this section over the Columbia River.

**West Option 5.** This option would have been a combination of West Options 2 and 4, using double-circuit towers both for the first 5 miles (to accommodate a possible future line) and on the 17-mile Chenoweth-Goldendale 115-kV line (to carry both the Big Eddy-Knight 500-kV line and the Chenoweth-Goldendale 115-kV line).

**West Option 6.** This option would have been a combination of West Options 3 and 4, using double-circuit towers for the first 5 miles and removing the Chenoweth-Goldendale 115-kV line and building single-circuit towers in its place.

### ***Middle Alternative***

The Middle Alternative would have included work at the Big Eddy and Wautoma substations as described for the East Alternative. The transmission line would have followed the same route as the East Alternative for the first 9 miles, from Big Eddy Substation to Wishram, Washington, along BPA's existing Harvalum-Big Eddy 230-kV line. This alternative also included the optional 1-mile realignment of the line outside of the existing Harvalum-Big Eddy right-of-way on the Oregon side of the Columbia River, as described for the East Alternative.

From Wishram, the Middle Alternative would have then headed generally north for about 15 miles to the Knight Substation sites, with two jogs east along the way—one for about 1.5 miles along BPA's existing Big Eddy-Spring Creek 230-kV lattice-steel transmission line, and the other for about 2 miles partially along BPA's existing Chenoweth-Goldendale 115-kV line. This alternative was about 27 miles long.

The Middle Alternative would have mostly crossed private land, but would have also crossed tribal allotments of the Warm Springs and Yakama Nation tribes and a USFS parcel. About 5.5 miles of the line would have been within the National Scenic Area: in this area about 3.5 miles of the line would have been next to existing BPA transmission lines and about 2 miles of new transmission line corridor would have been created.

The Middle Alternative had the following three tower configuration options:

**Middle Option 1.** This option would have been a single-circuit line for the entire length, paralleling existing lines as described above. It would have required new 150-foot-wide right-of-way except on a 9-mile section along the Harvalum-Big Eddy 230-kV line that would have been on existing right-of-way, but would have required an additional 12.5-foot width of right-of-way.

**Middle Option 2.** This option would have been the same as Middle Option 1, except for a 3-mile section of the line within the National Scenic Area boundary. In this 3-mile section, the line would have been built with double-circuit 500-kV towers to carry both the Harvalum-Big Eddy 230-kV line and the Big Eddy-Knight 500-kV line, the towers of the existing Harvalum-Big Eddy would have been removed, and no new right-of-way would have been needed.

**Middle Option 3.** This option would have been the same as Middle Option 1, except for a 9-mile section of the line that would have followed the Harvalum-Big Eddy 230-kV line and would have been built with double-circuit 500-kV towers to carry both the Harvalum-Big Eddy 230-kV line and the Big Eddy-Knight 500-kV line.

### ***Knight Substation Options***

BPA also considered a second location, Site 2, for the Knight Substation. Site 2 was adjacent to Site 1 on DNR property just west of Knight Road. Substation development of Site 2 would have been the same as for Site 1, except Site 2 would have required less excavation, the soil would have likely been taken off-site, and the access road would have come directly from Knight Road without the temporary access road for construction.

### ***Fiber Optic Cable Options***

BPA considered the Wautoma Option for the fiber optic cable, in addition to the selected Loop Back Option. Similar to the Loop Back Option, the Wautoma Option would have strung a fiber optic cable on the new towers from BPA's Big Eddy Substation north to Knight Substation. However, instead of returning a second cable to Big Eddy Substation, the fiber optic cable would have been strung an additional 72 miles from Knight Substation to BPA's existing Wautoma Substation in northwest Benton County, Washington. The fiber optic cable would have been strung on existing transmission towers that currently support BPA's Wautoma-Ostrander transmission line. About 30 miles of the fiber optic cable would have crossed the Yakama Indian Reservation within the existing Wautoma-Ostrander right-of-way easement.

The Wautoma Option was identified as BPA's preferred alternative for the fiber optic cable in the final EIS because it would better optimize the transmission communications system by creating a large communication loop that could be used by multiple substations. At this time, however, BPA is still in the process of consulting with the Yakama Nation concerning this option. Accordingly, as discussed above, BPA has decided to instead implement the Loop Back Option, which does not cross the Yakama Indian Reservation. Depending on the outcome of consultation with the Yakama Nation, BPA may decide to also build the Wautoma Option at a later date. BPA would complete an additional National Environmental Policy Act (NEPA) document as necessary prior to any such decision.

### ***No Action Alternative***

The No Action Alternative assumes that no transmission line and associated facilities are built. Without building the new line, BPA would not be able to offer long-term firm transmission service for all of the service requests that it has received through this area. However, the No Action Alternative would also not cause impacts to the natural environment (land uses, vegetation, wildlife, cultural resources, visual resources, etc.) that will occur from the construction and operation of the transmission line and substation. Therefore, BPA considers the No Action Alternative to be the environmentally preferred alternative.

## Public Comments on the EIS

BPA issued the draft EIS for the Big Eddy-Knight Transmission Project in December 2010. The comment period for the draft EIS officially began on December 10, 2010 with publication of a draft EIS Notice of Availability in the Federal Register (Volume 75, No. 237), and closed on January 28, 2011. About 400 people commented on the draft EIS via comment forms, the project website, emails, phone messages, and/or letters.

The final EIS addressed comments received on the draft EIS. BPA made the final EIS available to the public, and sent it to interested parties. A Notice of Availability of the final EIS was published in the Federal Register (Volume 76, No 136) on July 15, 2011.

Following issuance of the final EIS, BPA received a comment letter from the Yakama Nation and e-mails from a landowner whose property will be crossed by the new transmission line.

The Yakama Nation's letter raised several issues in preparation for a scheduled government-to-government consultation between the tribe and BPA. This letter outlined concerns about the impacts of wind energy development on natural and cultural resources within the Ceded Lands of the Yakama Nation, and asked for a greater BPA role in evaluating wind projects under NEPA and the National Historic Preservation Act (NHPA). The letter also requested that BPA not issue a Record of Decision (ROD) on the Big Eddy-Knight Transmission Project until BPA had consulted with the Yakama Nation. Finally, the letter raised concerns regarding the use of existing easements across the Yakama Indian Reservation for the fiber optic cable Wautoma Option that was identified in the final EIS.

BPA has reviewed and considered the Yakama Nation's letter and the issues it raises, and has discussed these issues with the Yakama Nation at a government-to-government consultation held in early August 2011. Regarding wind projects in the region, Section 1.7.1 of the final EIS provides information on the limited nature of BPA's involvement in and lack of jurisdiction over these wind projects, and explains why these projects are not within the scope of the Big Eddy-Knight Transmission Project. Nonetheless, the impacts of wind projects on natural and cultural resources in the region are acknowledged and discussed in the cumulative analysis in Chapter 4 of the final EIS. BPA also conducts separate NEPA reviews for each proposed interconnection of a wind project in the region to BPA's transmission system, and these NEPA reviews include consideration of cumulative natural and cultural resource impacts. BPA believes this appropriately fulfills BPA's NEPA responsibilities.

Regarding consultation with the Yakama Nation, BPA and Yakama Nation staff have been coordinating and meeting since February 2011 to determine issues to be addressed in preparation for formal consultation regarding the proposed project. As indicated above, this formal consultation was held in early August 2011. As a result of the consultation, BPA will host a meeting with the Yakama Nation and specific developers with existing or proposed wind energy projects in the Yakama Nation Ceded Lands to discuss and seek resolution regarding the protection of natural and archeological resources and request that the developers work with the tribes to avoid potential future site disturbances. BPA will continue consultation with the



Yakama Nation on the broader issues of concern to them; however BPA considers those issues to be outside the scope of this ROD for the Big Eddy-Knight Transmission Project.

Regarding the Wautoma Option for the fiber optic cable, as described elsewhere in this ROD, BPA has decided at this time to build the Loop Back Option for the fiber optic cable instead of the Wautoma Option. Because the Loop Back Option does not cross the Yakama Indian Reservation, this option does not implicate any Reservation easement concerns. BPA will continue to work with the Yakama Nation regarding possible implementation of the Wautoma Option and any easement issues related to that option.

The landowner e-mails that BPA received after issuing the final EIS were from Ms. Jessie Casswell, who lives along the East Alternative near the Little Klickitat River crossing. Ms. Casswell expressed a preference for the West Alternative and the use of existing easements. Ms. Casswell also requested bird count studies and other habitat and cultural resource studies for the Big Eddy-Knight project. Finally, Ms. Caswell raised concerns about impacts to their property, the Klickitat River, trees on their property, and bald eagles, as well as the accuracy of the analysis of these impacts in the EIS.

While BPA acknowledges Ms. Casswell's preference for the West Alternative, BPA has selected the East Alternative for implementation for the reasons stated in this ROD. It is worth noting that like the West Alternative, the East Alternative also will use existing BPA transmission line easements for a significant portion of its length (about 14 miles, or about half the length of the new line).

Regarding bird count studies, these types of detailed studies were not conducted because transmission lines typically have a very low incident of bird strikes. Information on the potential for bird collisions with the new line is provided in Section 3.6.2 of the EIS. Field surveys as well as extensive data searches were conducted for other wildlife species, vegetation, habitats, and cultural resources and that information is reported in Sections 3.3, 3.5, 3.6, 3.7, and 3.8 of the EIS. Due to their sensitive nature, BPA does not release detailed cultural resource studies to the general public, but has offered to provide cultural resource survey information to Ms. Casswell that is specific to her property.

Regarding potential impacts of the new line, BPA believes that the EIS adequately analyzes these impacts with a reasonable degree of accuracy to permit a sufficient understanding of the potential environmental impacts of the project. BPA has worked with the Casswells and, at their request, adjusted the location of a transmission line tower on their property to minimize property impacts. Concerning the specific issue of trees affected on the Casswell property, the final EIS identified a total of about 16 trees that would require removal along the East Alternative in order to build and maintain safe electrical line clearance; 10 of these trees were identified on the Caswell property. As more detailed design information has become available, BPA has now identified an additional six trees on the Casswell property that would require removal for the East Alternative. All 16 of the trees to be removed on the Casswell property are pine trees, with 10 of these trees located completely outside of any riparian area, and the

remaining six trees located at the outside edge of the riparian zone about 100 feet north of the Little Klickitat River. These six trees range from 50 feet to 80 feet tall. Rather than removing these trees, BPA is planning to top them to a 45-foot height to allow appropriate clearance from the transmission line and provide snag habitat. None of the trees identified have signs of bald eagle nests, nor are there signs of eagle nests in the vicinity. In addition, due to distance and the location on the north side of the Little Klickitat River, the trees do not provide shade to the river. BPA will continue to work with the Casswells regarding siting and impacts to their property.

## **Rationale for Decision**

BPA has analyzed the environmental impacts of the action alternatives and the No Action Alternative, and has considered public comments received on the draft EIS and final EIS. In making its decision, BPA also considered how well the alternatives would meet the following project purposes (i.e., objectives) identified for this project in the final EIS:

- Optimize electrical capacity and performance of the transmission system
- Maintain reliability of BPA's transmission system to BPA and industry standards
- Meet BPA's contractual and statutory obligations
- Minimize project costs where practical
- Minimize impacts to the natural and human environment
- Minimize future impacts

Generally, all action alternatives meet these objectives. BPA believes that, overall, the alternative that it has selected for implementation in this ROD would best balance meeting BPA's project design objectives with the other project purposes.

### ***Optimize Electrical Capacity/Performance***

The action alternatives, in contrast to the No Action Alternative, will allow BPA to fulfill requests for long-term firm transmission service that it has received by increasing the electrical capacity and transfer capability in the area. The increase in transfer capability will improve system reliability by allowing additional power to flow through the region to the head of the interties and to the Portland area during winter. The project will improve transmission system performance and address transmission system reliability issues by redistributing the power flow across the North of John Day flowgate (a monitored point on the transmission system where there may be congestion) and reducing real and reactive power loss, which will provide about 600 MW of additional transfer capability across the North of John Day flowgate. The proposed project will also provide more support to the Portland load service area by providing about 200 MW of additional transfer capability across the West of Cascades South flowgate for winter load conditions. The project aligns with the long-range transmission system plans and will defer the need for future reinforcement projects that would be needed in its absence.

All three transmission line routing alternatives would equally increase electrical capacity, transfer capability, and transmission system performance. Both Knight Substation sites 1 and 2

were strategically placed and would equally optimize electric system performance. Though the Wautoma Option for the fiber optic cable would provide better overall system communications performance than the chosen Loop Back Option, the Loop Back Option provides sufficient communications performance between Big Eddy and Knight substations.

The reactive devices added at Wautoma Substation will provide the ability to control high voltage conditions during light load conditions.

### ***Maintain System Reliability***

All action alternatives, in contrast to the No Action Alternative, equally allow BPA to accommodate the long-term firm transmission service requests it has received while maintaining reliability of BPA's transmission system to BPA and industry standards.

### ***Meet Contractual and Statutory Obligations***

All action alternatives, in contrast to the No Action Alternative, equally allow BPA to meet its statutory and contractual obligations. While BPA has no express statutory obligation to build the new transmission line, the new line will help BPA further its statutory mandates that direct BPA to construct additions to the transmission system in order to integrate and transmit electric power and maintain system stability and reliability, as appropriate. The new line will also allow BPA to provide access to the BPA transmission system to those customers with eligible service requests, consistent with provisions of its Open Access Transmission Tariff.

### ***Minimize Cost***

The East Alternative, Option 3 with Knight Substation Site 1, and the Loop Back Option will cost about \$185 million. The cost has been updated since the final EIS, as more detailed design information has become available. This is a reasonable cost for the construction of 28 miles of 500-kV line with 14 miles of double-circuit towers, a new substation, and work at two other substations. This cost is similar to the other action alternatives but more than the No Action Alternative and more than the cost of any of the alternatives with options that do not use double-circuit towers (double-circuit towers are more expensive than single-circuit towers).

### ***Minimize Environmental Impacts***

In designing each of the action alternatives, BPA attempted to minimize potential environmental impacts where possible. BPA also identified mitigation measures in the EIS that would further minimize or avoid potential environmental impacts. On balance, BPA believes the East Alternative Option 3, with Knight Substation Site 1 and the fiber optic cable Loop Back Option, best achieves the objective of minimizing impacts to the environment.

### **East Alternative Option 3**

The selected East Alternative Option 3 will have the least impact within the National Scenic Area and will generally be the most consistent with National Scenic Gorge Management Plan guidelines. The portions of this alternative that are within the National Scenic Area follow existing BPA single-circuit transmission lines that cross through the National Scenic Area. To

construct these portions of the new line, BPA will replace the transmission towers supporting the existing single-circuit lines with towers that will support both the existing lines and the new line. As discussed previously in this ROD, all transmission facilities within the National Scenic Area will be built within BPA's existing transmission line right-of-way, except for the slight realignment of the 1-mile portion in Oregon just south of the Columbia River crossing. In addition, the double-circuit towers that will be installed will be similar to the existing lattice-steel transmission towers that will be replaced. This approach to installing the new line in the National Scenic Area will both minimize facility footprint impacts to land use and natural resources and reduce potential impacts to visual resources.

In comparison, both the West and Middle alternatives would have created sections of new right-of-way through the National Scenic Area. The Middle Alternative would have created new right-of-way within the National Scenic Area over the Columbia Hills, where both new towers and access roads would have been visible from key viewing areas where there is no existing infrastructure. The West Alternative would have required an additional 50 feet of right-of-way, even in those segments using existing BPA right-of-way. In addition, the West Alternative would have either paralleled or replaced an existing wood-pole line, which would have created more dramatic visual and footprint impacts than replacing a lattice-steel line.

Once over the Columbia Hills and outside of the National Scenic Area, the three routing alternatives would have had similar visual impacts, but the specific landowners that would have had their views affected would have been different.

The East Alternative will impact the least amount of land managed for conservation and will not directly impact recreation lands. Although the East Alternative will cross a USFS parcel managed for conservation and dispersed recreation, it will cross the parcel in an existing BPA right-of-way using existing BPA access roads. In comparison, the West Alternative would have crossed the Columbia Hills State Park, DNR's Columbia Hills Natural Area Preserve, a Washington Department of Fish and Wildlife parcel managed for conservation, lands designated Agriculture Special by the National Scenic Area Management Plan, the Klickitat Trail, and a DNR parcel that is leased for agriculture but also provides dispersed recreation. The Middle Alternative would have crossed a USFS parcel managed for conservation and dispersed recreation and would have created a new corridor and access roads across the parcel.

The East Alternative will have more impact on lands used for agriculture than the West Alternative, but will have less impact on agricultural lands than the Middle Alternative. BPA has requested input from individual landowners on the placement of towers and roads on their properties, and will continue to work toward siting towers at edges of fields where possible and locating access roads where usable or desirable for both BPA and the landowner.

BPA has worked to site the transmission line so as to avoid removing homes and to provide as much distance from homes as possible to lessen visual impacts and address public health perceptions. The East Alternative will pass within 800 feet of fewer houses than the Middle Alternative, but more houses than the West Alternative. However, half of the houses passed by the East Alternative are in Wishram, Washington, where there is an existing transmission line corridor with lattice-steel towers. Overall, impacts to public health and safety would be similar

for all action alternatives. However, the East Alternative Option 3 will lessen existing electric and magnetic field exposure in areas where an existing line will be rebuilt with double-circuit towers, because when two lines are combined on one tower, the fields tend to cancel out each other.

The East Alternative will have the least impact of the three routing alternatives on vegetation and wetlands. The least number of trees will require removal (about 17 trees compared to 93–103 trees for the West Alternative and 26 trees for the Middle Alternative), no high-quality vegetation or state priority ecosystems will be impacted (the West Alternative would have impacted two potential state priority ecosystems and several areas of high-quality vegetation, while the Middle Alternative would have impacted one high-quality vegetation area) and the East Alternative will only potentially impact one special-status plant species—smooth desert-parsley—the West Alternative would have potentially impacted eight special-status species and the Middle Alternative would have potentially impacted two special-status species). Both the West and Middle alternatives would have impacted high-quality wetlands with vernal pool characteristics, while the East Alternative will only impact low-quality wetlands and fewer acres than the other alternatives. BPA will mitigate potential impacts to the special-status plant and wetlands along the East Alternative by identifying plant locations prior to construction, restricting disturbance in those areas, and establishing no-work buffer zones near wetlands.

The East Alternative will have low potential impacts to wildlife, with fewer impacts than the West Alternative and about the same amount of impact as the Middle Alternative. Wildlife habitat that will be disturbed along the East Alternative is common habitat abundant in the area. BPA will restrict construction footprints in more susceptible areas and implement timing restriction to avoid disturbance to cliff nesting raptors along the Washington side of the Columbia River Gorge.

The East Alternative has a greater potential to impact soils than the other alternatives because it crosses the most potential landslide areas. However, many of the landslide areas that will be crossed currently have existing BPA structures and roads with no history of erosion issues. In addition, extensive geotechnical work will be conducted to ensure that structures and roads will be designed for soil type and stability.

The East Alternative has similar potential to impact cultural resources as the Middle Alternative, but fewer potential impacts than the West Alternative, which would have crossed a high probability area for cultural resources. The East Alternative will affect one archaeological site, a portion of a BPA transmission line considered a historic property, and sites of religious and cultural significance that are potentially eligible for inclusion in the National Register of Historic Places identified through consultation with local tribes. BPA is developing a programmatic agreement in consultation with the Advisory Council on Historic Preservation, the Washington State Historic Preservation Office, the Oregon State Historic Preservation Office, the USFS, the Yakama Nation, the Warm Springs Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribe, and the Bureau of Indian Affairs. The programmatic agreement will address impacts to sites, protocols for areas not yet surveyed (due to lack of permission-to-enter properties and staging areas yet to be identified), and mitigation for

effects. Cultural resource monitors will be present during all phases of ground disturbance to ensure that no cultural resources are inadvertently affected by the project.

All three transmission line routing alternatives would have had similar low impacts to water resources, fish, socioeconomics, noise, transportation, air quality, and greenhouse gases. Implementation of mitigation measures for the East Alternative will lessen impacts to these resources.

### **Knight Substation Site 1**

Although Knight Substation Site 1 will have greater footprint and soils impacts than Site 2, it will have fewer impacts to visual resources because Site 1 will be farther from Knight Road where most potential viewers are located. Both Sites 1 and 2 would impact agricultural lands, but Site 2 would have impacted DNR trust lands, and Site 1 is a privately owned parcel currently for sale. Impacts to other resources (wildlife, vegetation, water, wetlands, fish, and cultural resources) are minimal and the same for both substation sites.

### **Fiber Optic Cable Loop Back Option**

Although the fiber optic cable Wautoma Option would have had minimal environmental impacts, the Loop Back Option will have even fewer environmental impacts. The Loop Back Option will not create an additional effect above or beyond those that will already occur from the construction of the Big Eddy-Knight transmission line.

### ***Minimize Future Impacts***

As explained previously in this ROD, the East Alternative Option 3 includes rebuilding portions of the existing single-circuit Harvalum-Big Eddy 230-kV and McNary-Ross 345-kV transmission lines with double-circuit towers so that these towers can accommodate both these existing lines and the new Big Eddy-Knight line. These new towers will be used for about the first 14 miles of the new line, from Big Eddy Substation to just before the line turns north over the Columbia Hills in Washington. Since the new line is a 500-kV line, these new towers will be built as 500-kV towers. This design would also allow, at some point in the future, the possible upgrade of the lower voltage Harvalum-Big Eddy and/or McNary-Ross lines to a 500-kV line(s) without needing to install additional structures along the Columbia Hills, across the Columbia River, and into Big Eddy Substation. Although there are no present plans for a line upgrade, using the double-circuit 500-kV towers at this time would reduce future environmental impacts should an upgrade become necessary.

### **Mitigation**

All the mitigation measures described in the draft EIS and updated in the final EIS that apply to the East Alternative, Knight Substation Site 1, and the Loop Back Option are adopted. A complete list of these measures is in the attached Mitigation Action Plan. Also included as part of the Mitigation Action Plan are possible measures to be implemented on DNR lands as negotiated by the Washington Statewide Rights-of-Way Memorandum of Agreement or other agreements. BPA will be responsible for the execution of all mitigation measures.

## Public Availability

This ROD will be available to all interested parties and affected persons and agencies. It is being sent to all stakeholders who requested a copy. Copies of the Big Eddy-Knight Transmission Project draft and final EISs and additional copies of this ROD are available from BPA's Public Information Center, P.O. Box 3621, Portland, Oregon, 97208-3621. Copies of these documents may also be obtained by using BPA's nationwide toll-free document request line: 1-800-622-4520, or by accessing BPA's project website: <http://www.bpa.gov/go/BEK>.

Issued in Portland, Oregon.

/s/ Stephen J. Wright

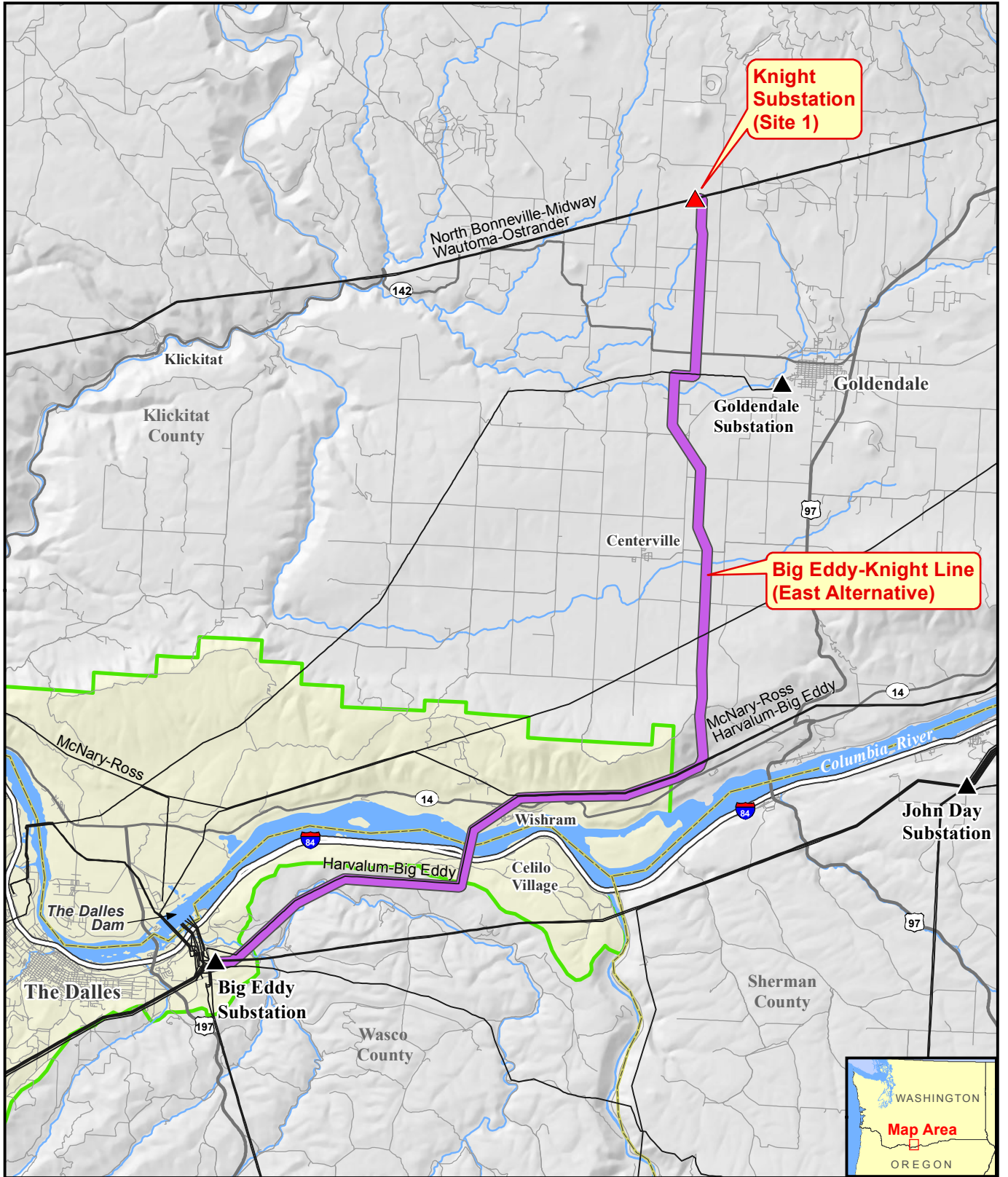
September 16, 2011

Stephen J. Wright

Date

Administrator and

Chief Executive Officer



## Big Eddy-Knight Transmission Project

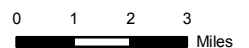


September 2011

### Existing Facilities

- ▲ BPA Substation
- BPA Transmission Lines

- ▭ Columbia River Gorge National Scenic Area
- ▭ County Boundary





**Mitigation Action Plan  
for the  
Big Eddy-Knight Transmission Project**

<b>Mitigation Measures</b>	<b>Time of Implementation</b>
<b>Land Use and Recreation</b>	
<ul style="list-style-type: none"> <li>• Provide a schedule of construction activities to all landowners that could be affected by construction.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>• Limit construction to daylight hours, minimizing disturbance to those residents who work during the day.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Compensate landowners for any new land rights required for right-of-way or access road easements.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>• Compensate landowners for any damage to property during construction.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>• Compensate landowners for reconfiguration of irrigation systems due to placement of towers or access roads.</li> </ul>	After construction
<ul style="list-style-type: none"> <li>• Restore compacted cropland soils as close as possible to preconstruction conditions using tillage.</li> </ul>	After construction
<ul style="list-style-type: none"> <li>• Do not allow mixing of excavated material with topsoil outside of tower footprint on farms or croplands.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Work with landowners to determine mitigation measures needed to maintain Conservation Reserve Program (CRP) status, if needed.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Follow applicable goals and objectives of the National Scenic Area Management Plan with guidance from the U.S. Forest Service (USFS) and Columbia River Gorge Commission (CRGC) in the Columbia River Gorge National Scenic Area (National Scenic Area).</li> </ul>	During design and prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Reseed disturbed areas (see mitigation measures in Vegetation).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>• Implement measures to reduce the possible spread of noxious weeds (see mitigation measures in Vegetation).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Implement measures to control dust (see mitigation measures in Geology and Soils)</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Implement measures to control construction noise (see mitigation measures in Noise).</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Install gates, barriers, and postings at appropriate access points at the landowner's request, to minimize or eliminate public access to project facilities.</li> </ul>	During and after construction
<b>Visual Resources</b>	
<ul style="list-style-type: none"> <li>• Site all construction staging and storage areas away from locations that would be clearly visible from sensitive scenic areas, trails, and scenic highways as much as practical.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Treat galvanized steel towers and transmission line conductors to dull the shininess of the steel</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>• Implement construction site maintenance and clean-up. Keep construction areas free of debris.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>• Provide regular maintenance of access roads and gates within and leading to the corridor.</li> </ul>	After construction
<ul style="list-style-type: none"> <li>• Reseed disturbed areas (see mitigation measures for Vegetation).</li> </ul>	After construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>Implement measures to reduce the possible spread of noxious weeds (see mitigation measures in Vegetation).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Implement measures to control erosion and dust (see mitigation measures in Geology and Soils, and Air Quality).</li> </ul>	During and after construction
<b>Vegetation</b>	
<ul style="list-style-type: none"> <li>Locate towers and roads outside of priority ecosystems, high-quality vegetation communities, and areas of special-status plants as much as possible. Avoid these areas during construction (staging areas, pulling sites, etc.).</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Avoid tree removal to the extent possible.</li> </ul>	During design and prior to and after construction
<ul style="list-style-type: none"> <li>Cut or crush vegetation rather than blade in areas that would remain vegetated to maximize the ability of native plants to resprout.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Work with the appropriate state agency to mitigate impacts to federal species of concern, state-listed species, or protected habitats if impacts are unavoidable. Site-specific mitigation to be determined after a project decision is made and during tower location and design. Measures could include the following: <ul style="list-style-type: none"> <li>Ecologically optimizing siting of facilities</li> <li>Special construction techniques to minimize soil disturbance</li> <li>Seasonal restrictions</li> <li>Identifying and securing replacement lands</li> <li>Identifying appropriate seed or plant sources for revegetation</li> <li>Monitoring and response provisions.</li> </ul> </li> </ul>	During design and prior to, during, and after construction
<ul style="list-style-type: none"> <li>Seed all disturbed areas to prevent colonization by weeds and facilitate reestablishment of the preconstruction plant community. Use native seed mixtures that consist of locally dominate native species, unless requested differently by the landowner. On CRP lands, use native seed mixtures approved by the local Farm Service Agency (FSA).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Restore compacted soils if needed prior to seeding (see mitigation measures in Land Use).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Prepare and implement an Early Detection Rapid Response Plan to control the infestation or spread of noxious weeds that would include the following measures: <ul style="list-style-type: none"> <li>Collaborate with the Klickitat County Weed Board or Wasco County Weed Department and landowners to determine and carry out the best control measures deemed locally effective for weed control during construction and over the life of the line.</li> <li>Conduct invasive weed surveys prior to and following construction to determine potential weed spread and appropriate corrective actions.</li> <li>Where possible, treat identified infestations prior to construction.</li> <li>Pressure or steam wash vehicles and other equipment that have been in weed-infested areas at established wash stations upon leaving the infested areas to prevent spreading weeds to uninfested areas during construction.</li> <li>Monitor and treat existing and new infestations during construction on a minimum annual basis and for 3 years after construction.</li> </ul> </li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Equip all vehicles with basic fire-fighting equipment, including extinguishers and shovels to prevent fires that could encourage weed growth.</li> </ul>	Prior to and during construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>Use certified weed-free mulch, if mulch is used for erosion control.</li> </ul>	During and after construction
<b>Geology and Soils</b>	
<ul style="list-style-type: none"> <li>Minimize the project ground disturbance footprint, particularly in sensitive areas (i.e., steep slopes and landslide areas).</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) for construction activities to lessen soil erosion and improve water quality of stormwater runoff.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>For the SWPPP, use management practices contained in the Storm Water Management Manual for Eastern Washington (e.g., use silt fences, straw bales, interceptor trenches, or other perimeter sediment management devices; place them prior to the onset of the rainy season and monitor and maintain them as necessary throughout construction).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Prepare a Fugitive Dust Control Plan to control dust.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Water or use palliatives on exposed soil surfaces in areas disturbed during construction.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Water, use palliatives, or cover construction materials if they are a source of blowing dust.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Gravel access road surfaces in areas of sustained wind and potential dust erosion.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Limit the amount of time soils are left exposed.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>Reseed disturbed areas (see mitigation measures in Vegetation).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Restore compacted soils (see mitigation measures in Section 3.1 Land Use).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Conduct additional site-specific evaluations in areas of potential landslides to determine degree of recent activity, likelihood of activation or reactivation, potential setbacks, and site-specific stability as appropriate.</li> </ul>	During design
<ul style="list-style-type: none"> <li>Design roads to limit water accumulation and erosion; install appropriate access road drainage (ditches, water bars, cross drainage, or roadside berms) to control and disperse runoff.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Design transmission tower footings and roads for specific site conditions through detailed geologic hazard assessments, including review of geologic maps and aerial photography, surface condition assessments, and geological testing at representative sites.</li> </ul>	During design
<ul style="list-style-type: none"> <li>Minimize construction on steep or unstable slopes, if possible.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Relocate towers or roads located within previously unidentified active slides, bedrock hollows, or other geologic hazard areas, where possible.</li> </ul>	During design
<b>Water Resources and Wetlands</b>	
<ul style="list-style-type: none"> <li>Minimize the project ground disturbance footprint, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Develop and implement a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for spills of hazardous material, including provisions for storage of hazardous materials and refueling of construction equipment outside of riparian zones, spill containment and recovery plan, and notification and activation protocols.</li> </ul>	Prior to and during construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>• Prepare and implement a SWPPP (see mitigation measures in Geology and Soils) to improve water quality of stormwater runoff.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Prepare to manage dewatering, including proper disposal of drilling fluids and mud away from wetlands or surface waters.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Prepare for management of excess concrete.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Remove and dispose of sediment properly, away from wetlands or surface waters.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Install culverts for access roads in the dry season or during low-flow conditions if possible to minimize sediment delivery to streams.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Limit tracking of soil onto paved roads by gravelling road approaches, washing vehicle wheels, and cleaning mud and dirt from paved roads to reduce sediment delivery to roadside ditches and nearby streams.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Avoid use of heavy equipment and vegetation removal in wetlands and wetland buffer zones to avoid soil compaction, destruction of live plants, and potential alteration of surface water patterns. Use track equipment or matting, if appropriate.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Avoid placing staging areas in wetlands or stream buffers.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Avoid placing new access roads through wetland complexes around the Columbia River, Fifteenmile Creek, Little Klickitat River, Spring Creek, Swale Creek, and Blockhouse Creek to minimize the potential for altering surface water patterns and isolating connected wetlands.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>• Obtain all appropriate permits with approved wetland delineations and compensatory mitigation plans prior to construction as needed.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>• Use high-visibility fencing around wetland buffer zones to avoid inadvertent activity (e.g., parking and driving) in wetlands or buffers or streams.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Reseed disturbed areas (see mitigation measures in Vegetation).</li> </ul>	After construction
<b>Wildlife</b>	
<ul style="list-style-type: none"> <li>• Minimize the project ground disturbance footprint, particularly in special-status areas such as priority habitats, which can include riparian areas, wetlands, and grassland/shrub-steppe.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>• Avoid tree removal to the extent possible.</li> </ul>	During design and prior to and after construction
<ul style="list-style-type: none"> <li>• In locations where nests for special-status species have been identified, determine construction schedules through consultation with Washington Department of Fish and Wildlife or Oregon Department of Fish and Wildlife to avoid breeding season disturbance. The following mitigation schedules will be implemented where possible: <ul style="list-style-type: none"> <li>➤ Peregrine falcon—avoid construction activities within 0.25 mile of any active nests during the breeding season (February 1 through July 15 or until young have fledged).</li> <li>➤ Prairie falcon—avoid construction activities within 0.25 mile of any active nests during the breeding season (March 1 through July 30 or until young have fledged).</li> <li>➤ Bald eagle and golden eagle—avoid construction activities within 0.25 mile of active nests during the breeding season (January 1 through August 31 or until young have fledged).</li> </ul> </li> </ul>	Prior to and during construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>Install bird diverters on overhead ground wires in high risk areas (over river and stream crossings and near wetlands).</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Prepare and implement a SWPPP and a Spill Prevention, Control, and Countermeasure Plan (see mitigation measures for Geology and Soils and Water Resources and Wetlands) to protect wetland habitats.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Reseed disturbed areas (see mitigation measures for Vegetation).</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Prepare for fire control (see mitigation measures for Vegetation) to protect habitats.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>Work with the appropriate state agencies to mitigate impacts to federal species of concern, state-listed species, or protected habitats if impacts are unavoidable (see mitigation measures for Section 3.3 Vegetation).</li> </ul>	During design and prior to, during, and after construction
<p><b>Fish</b></p>	
<ul style="list-style-type: none"> <li>Minimize the project ground disturbance footprint, reseed disturbed areas, and install culverts during the dry season (see mitigation measures for Vegetation and Water Resources and Wetlands) to limit sedimentation affecting fish habitat.</li> </ul>	During design and construction, and after construction
<ul style="list-style-type: none"> <li>Prepare and implement a SWPPP and a Spill Prevention, Control, and Countermeasure Plan (see mitigation measures for Geology and Soils and Water Resources and Wetlands) to protect fish habitat.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Avoid blasting within 200 feet of fish-bearing streams.</li> </ul>	During construction
<p><b>Cultural Resources</b></p>	
<ul style="list-style-type: none"> <li>Locate transmission line towers and access roads to avoid cultural resources, where possible.</li> </ul>	During design
<ul style="list-style-type: none"> <li>Use existing access roads where possible to limit possibility of new disturbances.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Consult with the Washington State Department of Archaeology and Historic Preservation (DAHP) or Oregon State Historic Preservation Office (SHPO), as applicable; the Advisory Council, the Confederated Tribes of the Warm Springs Reservation of Oregon; the Confederated Tribes and Bands of the Yakama Nation, the Nez Perce Tribe, and the Confederated Tribes of the Umatilla Indian Reservation; state agencies (if sites found on state lands); and the USFS (if sites found on USFS land or within the National Scenic Area) regarding National Register of Historic Place (NRHP) eligibility of cultural resources.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Develop an Inadvertent Discovery Plan that details crew member responsibilities for reporting in the event of a discovery during construction. This plan should include directives to stop work immediately and notify local law enforcement officials (if appropriate), appropriate BPA personnel, Tribes, USFS (if appropriate), and the Washington DAHP or Oregon SHPO if cultural resources are discovered.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Ensure cultural resource monitors are present during construction in the area of known cultural resources to monitor sites during excavation and to prevent unauthorized collection of cultural materials.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>Prepare a mitigation plan to protect sites if final placement of project elements results in unavoidable adverse impacts to a significant cultural resource.</li> </ul>	Prior to and during construction
<p><b>Socioeconomics</b></p>	
<ul style="list-style-type: none"> <li>Compensate landowners at market value for any new land rights for right-of-way or access road easements.</li> </ul>	Prior to construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>• Compensate landowners for damage to property or crops during construction or operation and maintenance activities, as appropriate.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>• Compensate landowners for irrigation systems that must be reconfigured to accommodate new transmission infrastructure.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Consult with the Natural Resource Conservation Service (NRCS) and FSA to mitigate impacts to CRP land to maintain existing CRP status of lands and federal payments to landowners, where practicable (see mitigation measures in Vegetation).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Prepare for fire management (see mitigation measures in Vegetation).</li> </ul>	Prior to and during construction
<b>Transportation</b>	
<ul style="list-style-type: none"> <li>• Coordinate with Klickitat County roads department for upgrades of county roads.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Coordinate routing and scheduling of construction traffic with state and county road staff, Columbia River operators, and railroad operators.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Employ traffic control flaggers and post signs warning of construction activity and merging traffic, when necessary for short interruptions of traffic.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Conduct regular maintenance on access roads and gates within and leading to the corridor.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Prepare and implement a SWPPP (see mitigation measures in Geology and Soils) to prevent sediments from being transported onto adjacent roadways.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>• Limit tracking of soil onto paved roads (see mitigation measures in Geology and Soils).</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Design roads to limit erosion (see mitigation measures in Geology and Soils).</li> </ul>	During design
<ul style="list-style-type: none"> <li>• Restore public roadways to preconstruction conditions upon completion of project construction activities.</li> </ul>	After construction
<ul style="list-style-type: none"> <li>• Coordinate with the Washington State Department of Transportation (WSDOT) Aviation Division and comply with Federal Aviation Administration (FAA) regulations for marking or lighting (including lighting towers and installing marker balls on overhead ground wires in specific locations).</li> </ul>	Prior to and during construction
<b>Noise</b>	
<ul style="list-style-type: none"> <li>• Ensure standard sound-control devices, including mufflers, are on all construction equipment and vehicles.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Limit construction activities to daytime hours.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>• Notify landowners located along the corridor prior to construction activities, including blasting.</li> </ul>	Prior to construction
<b>Public Health and Safety</b>	
<ul style="list-style-type: none"> <li>• Notify landowners located along the corridor prior to construction activities, including blasting.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>• If blasting is required, take appropriate safety measures and follow all state and local codes and regulations. Lock up or remove all explosives from work sites at the end of the workday.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>• Hold crew safety meetings at the start of each construction workday to review potential safety issues.</li> </ul>	During construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>Prepare and implement a Spill Prevention, Control, and Countermeasure Plan (see mitigation measures in Water Resources and Wetlands) to manage hazardous materials and respond to emergency situations.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Prepare and maintain an on-site safety plan in compliance with state requirements.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Prepare for fire control (see mitigation measures in Vegetation).</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>Fuel all highway-authorized vehicles off-site to minimize the risk of fire. Fueling of construction equipment that is transported to the site via truck and is not highway authorized will be done in accordance with regulated construction practices and state and local laws. Helicopters will be fueled and housed at local airfields or at staging areas.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Secure the site at the end of each workday to protect equipment and the general public.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Ensure that BPA contractors flying helicopters prioritize public safety during flights. For example, establish flight paths to avoid populated areas or schools (Helicopter Association International 1993).</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Implement appropriate airport safety measures (see mitigation measures in Transportation).</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Clear vegetation according to BPA standards to avoid contact with transmission lines prior to project construction and throughout the life of the line.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Prepare and implement a lead abatement plan that would cover removal and disposal of any contaminated paint chips in accordance with applicable federal, state, and local environmental and safety standards.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Report possible hazardous materials, toxic substances, or petroleum products discovered along the transmission line route that would pose an immediate threat to human health or the environment, including large dump sites, drums of unknown substances, suspicious odors, stained soil, etc..</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Adhere to appropriate specifications for grounding fences and other objects on and near existing and proposed rights-of-way.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Design, construct, and operate the new transmission line according to the National Electric Safety Code (NESC).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Restore reception quality if radio or television interference occurs as a result of constructing the transmission line so that reception is as good as or better than before the interference.</li> </ul>	After construction
<b>Air Quality</b>	
<ul style="list-style-type: none"> <li>Prepare and implement a SWPPP (see mitigation measures in Geology and Soils) to limit erosion and dust generation.</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Prepare a Fugitive Dust Control Plan to control windblown dust (see mitigation measures in Geology and Soils).</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Reseed disturbed areas (see mitigation measures in Vegetation) to prevent dust from erosion.</li> </ul>	After construction
<ul style="list-style-type: none"> <li>Shut down idling construction equipment, if feasible.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Ensure all vehicles are in compliance with applicable federal and state air quality regulations for tailpipe emissions. Certification that vehicles meet applicable regulations will be provided by contractors to BPA in writing.</li> </ul>	Prior to construction

Mitigation Measures	Time of Implementation
<ul style="list-style-type: none"> <li>Maintain and certify in writing that all construction equipment is in proper working condition according to manufacturer's specifications.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Obtain rock and concrete from sources with appropriate environmental permits.</li> </ul>	Prior to and during construction
<b>Greenhouse Gases</b>	
<ul style="list-style-type: none"> <li>Implement vehicle idling and equipment emissions measures (see mitigation measures in Air Quality).</li> </ul>	Prior to, during, and after construction
<ul style="list-style-type: none"> <li>Encourage carpooling and the use of shuttle vans among construction workers to minimize construction-related traffic and associated emissions.</li> </ul>	Prior to and during construction
<ul style="list-style-type: none"> <li>Locate all staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.</li> </ul>	During design and construction
<ul style="list-style-type: none"> <li>Use the proper size of equipment for the job.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power where practicable.</li> </ul>	During construction
<ul style="list-style-type: none"> <li>Reduce electricity use in the construction office by using compact fluorescent bulbs, and powering off computers every night.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>Recycle or salvage non-hazardous construction and demolition debris to the maximum extent practicable.</li> </ul>	During and after construction
<ul style="list-style-type: none"> <li>Submit a plan for approval to dispose of wood poles locally where practicable.</li> </ul>	Prior to construction
<ul style="list-style-type: none"> <li>Use locally sourced rock for road construction, if possible.</li> </ul>	During construction



## Potential Measures on Department of Natural Resource Parcels

Measure	Implementation
Implement the Memorandum of Agreement (MOA) with Washington Department of Natural Resources (DNR) that reduces noxious, invasive, and undesirable species including tall-growing woody plants, and works towards compatible and native low-growing species vegetation on DNR lands. The MOA also will provide coordination between DNR and BPA for the use of herbicides on lands where DNR uses herbicides and minimize the use of herbicides on lands where DNR does not use herbicides.	Washington Statewide Rights-of-Way MOA/DNR Easement Document
Commit to developing and complying with mutually agreeable definitions, classifications, and responsibilities for BPA sole and joint use access roads for the proposed project that would be located on DNR lands, with the goal of addressing operations and maintenance compatibility of the proposed transmission line with DNR trust land management.	Washington Statewide Rights-of-Way MOA/DNR Easement Document
For any noxious weed management plans prepared for proposed weed control and other vegetation maintenance on DNR managed trust lands as part of future line maintenance activities, coordinate preparation of these management plans with DNR staff.	Noxious Weed Management Plans
Commit to coordinating with DNR regarding the 1989 DNR Agricultural and Grazing lands Policy Plan and related Resource Management Plans for individual parcels during construction and maintenance of the line and access roads over DNR trust lands. Provide DNR with notice of potential impacts to affected lands enrolled in CRP. Request permission to disturb ground cover as needed to complete the project, and agree to restore impacted lands outside of lands developed for tower pads and access roads to the same type of cover at no expense to any applicable DNR lessee or to DNR as landowner.	Washington Statewide Rights-of-Way MOA
Implement the Appraisal MOU with DNR to pay fair market value for any easement conveyances granted to BPA on trust lands.	Appraisal MOU
Utilize the Appraisal MOU with DNR to assess the value for any reduction in CRP acreage due to construction of access roads or towers.	Appraisal MOU
Work with DNR concerning a possible cooperative agreement for the control of unauthorized public access and use on state lands that could result from the proposed project. The agreement could address various provisions related to unauthorized access, such as additional measures to be taken to discourage unauthorized use of the project corridor and associated access roads, periodic inspection for unauthorized access and any resulting damage, and repair of any damage from unauthorized access. BPA will strive to design the corridor to prevent trespass and provide signs that discourage unauthorized use of the corridor.	Washington Statewide Rights-of-Way MOA (see McNary-John Day Maintenance and Operations Agreement) /DNR Easement Document
Mark the easement corridor in strategic locations on DNR land so that BPA, contractors, adjacent landowners, and the public can clearly recognize when they are within the corridor to prevent uncompensated corridor expansion and vegetation management conflicts, and to reduce trespass.	Washington Statewide Rights-of-Way MOA (see McNary-John Day Maintenance and Operations Agreement) /DNR Easement Document
Develop a mutually agreeable fire prevention and suppression plan with DNR that addresses managing and controlling the risks associated with wildland fire due to construction, operation, and maintenance of the transmission line.	Washington Statewide Rights-of-Way MOA (see McNary-John Day Maintenance and Operations Agreement) /DNR Easement Document