CRGNSA CONSISTENCY DETERMINATION
CD-11-10-G

BONNEVILLE POWER ADMINISTRATION
BIG EDDY-KNIGHT TRANSMISSION PROJECT
COLUMBIA RIVER GORGE NATIONAL SCENIC AREA
NOVEMBER 22, 2011

BACKGROUND

The proposed Big Eddy-Knight Transmission Project by Bonneville Power Administration (BPA) is a regional-scale project that will occur on federal-owned easements crossing public and private lands on lands in Wasco County, Oregon and Klickitat County, Washington. Portions of the proposed development are located within the Columbia River Gorge National Scenic Area (CRGNSA) on lands designated General Management Area Large-Scale Agriculture and are required to be consistent with the purposes of the NSA Act and Management Plan for the CRGNSA as determined by the Forest Service pursuant to Section 14(d) of the CRGNSA Act. Additionally, the Management Plan for the CRGNSA sates that the Forest Service shall review and issue a determination of consistency with the Management Plan for projects on federal lands and any land use and development actions of federal agencies. Federal resource specialists will provide resource review for projects on federal lands (2011, MP Policy 4 pg. II-7-57).

DECISION

As proposed, the Big Eddy-Knight Transmission Project (Project) is consistent with the Management Plan for the CRGNSA, provided that it is implemented as described in the approved application materials, as amended by the findings of fact, and the following conditions are applied:

1. If any historic or prehistoric cultural resources are uncovered during project activities, the applicant shall cease work and immediately notify the CRGNSA and the Oregon or Washington Office of Archeology and Historical Preservation. The applicant shall also notify the four Indian Tribal governments within 24 hours if the resources are prehistoric or otherwise associated with Native American Indians.
2. Any soil excavated as part of the project will be re-contoured at the site, used for stabilization in an approved location or removed from the Scenic Area.
3. All disturbed areas (excluding road bed) shall be re-seeded with the approved, weed free, native seed mixture attached to this decision no later within 1 year of the ground disturbance. Any deviations from this seed mix will require approval of the Forest Service. Revegetation will be completed within three years.
4. All new transmission towers shall be lattice style design. No solid towers will be utilized without first submitting revised plans to the Area Manager for review and approval.
5. All new transmission towers shall be treated to have a dull-finish.

6. All ancillary structures such as access road gates shall be painted a dark earth-tone color.
7. All FAA required lighting shall be directed upwards where possible (within FAA safety standards and requirements) to minimize impacts to KVAs.
8. A condition of approval for new road construction on identified sections of Road 01a; 07a; 07b; 09c; 09d; 10a; 11b; and 11c will include reseeding all cut and fill slopes with an approved, weed free, native seed mixture attached to this decision no later within 1 year of the ground disturbance. Any deviations from this seed mix will require approval of the Forest Service. Revegetation will be completed within three years.
9. Excavated footings for removed towers shall be back-filled with clean soil and re-vegetated.
10. A silt fence shall be placed at the top of the wetland on Access Road 09d to prevent sedimentation during repair activities.
11. The placement of new culverts and rock fords on either existing or new access roads shall require the following conditions:
    - All culverts shall be sized to accommodate a 100 year flood event and constructed according to the submitted Culvert Installation Typical Details.
    - If the applicant determines that a Rock Ford is more appropriate installation than a culvert, the Forest Service must approve the use of the other structure.
    - All Rock Fords shall be designed and constructed using rock of sufficient size so that channel incision will not occur through the structure under flow conditions up to the 50 year recurrence interval flood. Rock Fords shall be constructed according to all other specifications in the submitted Rock Ford Detail.
    - The replacement of existing culverts are a use allowed outright provided "*the entity or person owning or operating the culvert shall obtain all necessary federal and state permits that protect water quality and fish and wildlife habitat before construction*" and are an allowed use not subject to review in the Management Plan (MP, II-7-13).
12. The Forest Service has determined that the following conditions should be applied to the project for protection of wildlife within the CRGNSA:
    - BPA will schedule a meeting with biologists (or designated representatives) from the CRGNSA; WDFWS, and ODFW before beginning nesting surveys for species identified in Findings G13. Results of nesting surveys will be distributed to all three agencies. If nesting surveys identify the presence of an active nest, timing and operational restrictions are mandatory until released by the respective state agency.
    - BPA has included mitigations for the use of bird diverters on overhead ground wires in high risk areas (over river and stream crossing and near wetlands). The Forest Service also encourages BPA to consider the placement of bird diverters on the remaining portions of the Big Eddy Knight transmission line located within the National Scenic Area.
    - The Forest Service encourages the use of bird diverters neutral in color.

ADMINISTRATIVE REVIEW OPPORTUNITIES

A written request for review of the Consistency Determination, with reasons to support the request, must be received within 20 days of the date shown with the Area Manager signature below. Requests for review should be addressed to: Request for Review, Regional Forester, P.O. Box 3623, Portland, OR 97208.

IMPLEMENTATION DATE

Work on the proposed development may begin immediately if it complies with the conditions of approval described in this decision (above). CRGNSA decisions expire two years after the date of determination. This decision becomes void on November 22, 2013. A one-year extension may be requested if submitted in writing prior to expiration of the approval. If implementation or a request for an extension has not commenced before that date a new consistency review shall be required.

CONTACT

The Columbia River Gorge National Scenic Area staff prepared an analysis file in conjunction with this project. For further information, contact Lynn Oliver at the Columbia River Gorge National Scenic Area, phone: (541) 308-1716, e-mail: loliver@fs.fed.us.

11/22/11

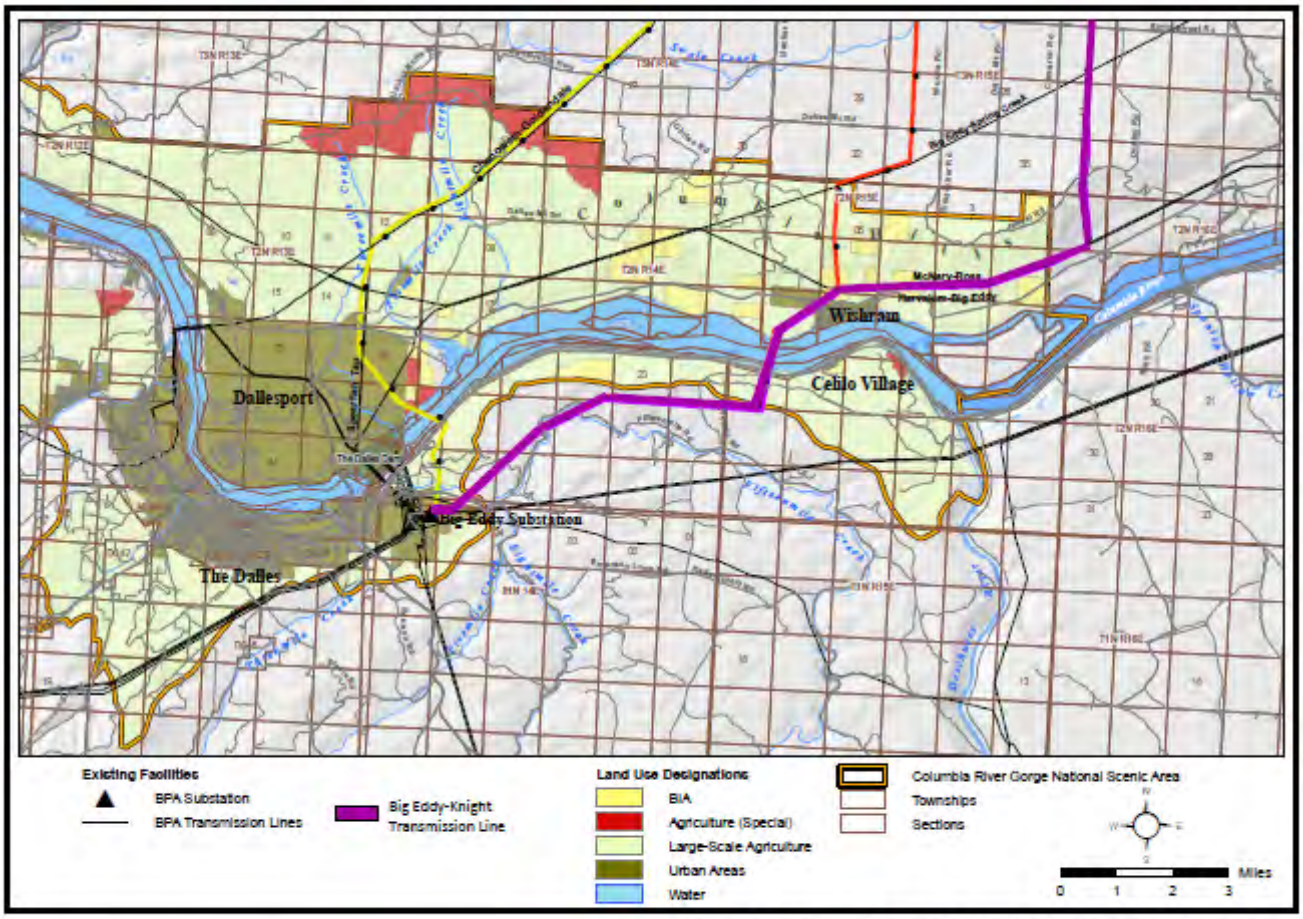
DAINA L. BAMBE
Date

ACTING AREA MANAGER

PROJECT INFORMATION

APPLICANT/LANDOWNER:	Bonneville Power Administration
PROPOSED ACTION:	Constructing 4.7 miles of the Big Eddy-Knight transmission line project (a 500 kilovolt (kV) transmission line and ancillary facilities including 22.5 miles of new and existing roads).
LOCATION:	Portions of Wasco and Klickitat County within the Columbia River Gorge National Scenic Area (see vicinity map below and approved site plans).
NATIONAL SCENIC AREA DESIGNATION:	General Management Area
LAND USE DESIGNATION:	Large-Scale Agriculture
LANDSCAPE SETTING	Pastoral and Grassland

VICINITY MAP



Map 1. Columbia River Gorge National Scenic Area Land Use Designations

FINDINGS OF FACT:

The following findings of fact contain the applicable standards and guidelines from the Management Plan for the CRGNSA. The Management Plan, as adopted in 2004 and updated in 2011, is in effect.

A. PUBLIC COMMENT

Prior to application submittal, BPA prepared a Final Environmental Impact Statement (DOE/EIS-0421, July 2011) to analyze the impacts for the entire Big Eddy-Knight Transmission Line Project, which extends outside of the CRGNSA in a 28-mile-long, 500 kilovolt (kV) transmission line with ancillary facilities (including roads) between The Dalles, Oregon and Goldendale, Washington. Three transmission line alternatives and a no action alternative were evaluated. In September 2011, BPA issued a Record of Decision (ROD) describing the selected alternative, which includes 4.7 miles of development within the Columbia River Gorge National Scenic Area.

BPA solicited comments from the public; affected and nearby landowners; Treaty Tribes; federal, state, regional, and local agencies; interest groups; and others to help determine what issues should be studied during the scoping period of the EIS (summer 2009). Based on initial public comments and additional studies of the transmission system, BPA refined the proposed alternatives. In December 2009, BPA distributed a public a factsheet that described the refinements and requested additional comments. In December 2010, BPA distributed the draft EIS and received approximately 400 comments.

The Final EIS was issued July 15, 2011 and addressed comments received from the draft EIS. BPA made the Final EIS available to the public, and sent it to interested parties. As a result of the EIS process, BPA released a Record of Decision (ROD) on September 16, 2011. The public was notified of the ROD through direct mailings, BPA's website and media releases.

The Forest Service provided an opportunity for interested parties to submit comments by issuing a notice of consistency review on September 30, 2011 to a mailing list of known interested parties, adjacent landowners and made it available on their website. A period of 30 days was allowed for public comment. Comments were received from the following:

- One local resident near Fifteen Mile Creek called concerning potential impacts to a domestic source of groundwater that may be impacted by the placement of tower 1/3. During the 10/12/11 field inspection this concern was determined outside the scope of the Management Plan.
- One local resident sent correspondence supporting re-alignment of the transmission corridor for towers 7/3; 7/4; 7/4.
- The Friends of the Gorge (FOG) submitted one comment letter on October 31, 2011 concerning the proposed project and also included all written comments submitted for the Big Eddy Knight FEIS. A summary of their main points include:
    - The FOG stated that the Forest Service should complete a NEPA review of the Big Eddy Knight FEIS. *Response: Reviewing the adequacy of an applicant's NEPA document is outside the scope of the consistency review and there are no requirements in the Management Plan to do so.*
    - FOG identified a number of different scenic, cultural, and natural resource standards that should be evaluated as part of the consistency review. *Response: All applicable policy and standards were reviewed in the consistency review and applicable conditions of approval were identified.*
    - FOG identified that existing and new cumulative effects guidelines for scenic, cultural, and natural resources be included as part of the consistency review. *Response: All applicable policy and standards were reviewed in the consistency review and applicable conditions of approval were identified.*

B. PROJECT PROPOSAL

BPA plans to construct a 28-mile-long, 500 kilovolt (kV) transmission line and ancillary facilities (including roads) between The Dalles, Oregon and Goldendale, Washington. Approximately 4.7 miles of the project will be located within the CRGNSA. Existing transmission lines consist of a single circuit 250 kV transmission line and in some locations, additional wood pole lines. According to BPA, the existing towers do not have the capacity to add additional lines in order to meet the region's energy needs for transmission or safety. As opposed to acquiring additional easements and constructing a second or third transmission line corridor, the proposed transmission line will replace existing 250kV towers with 500kV double circuit towers in the existing transmission line right-of-way to co-locate and combine transmission line needs onto new towers in the same easement.

The portions of the transmission line located in designated Urban Area and Bureau of Indian Affairs are exempt from review of the NSA Act and Management Plan. Within the NSA there are a total of 4.7 miles of transmission line in the General Management Area that are subject to review for consistency with the Management Plan. These 4.7 miles of transmission line and associated ancillary facilities are hereafter identified as the project and are described in full in the project application. Findings of fact evaluating consistency of the proposed development with provisions of the Management Plan are included in this document. The project application contains the complete description of the project. The four primary activities that will be reviewed under the Management Plan include:

Access Roads - Maintenance, repair, and new construction of ~ 22.5 miles of access road (Existing and New).
Ground clearing activities - For construction of counterpoise, pulling and tensioning sites.:
Removal existing transmission towers – 24 towers.
Construction of new transmission towers with sites – 26 towers (Typical tower diagram shown below).

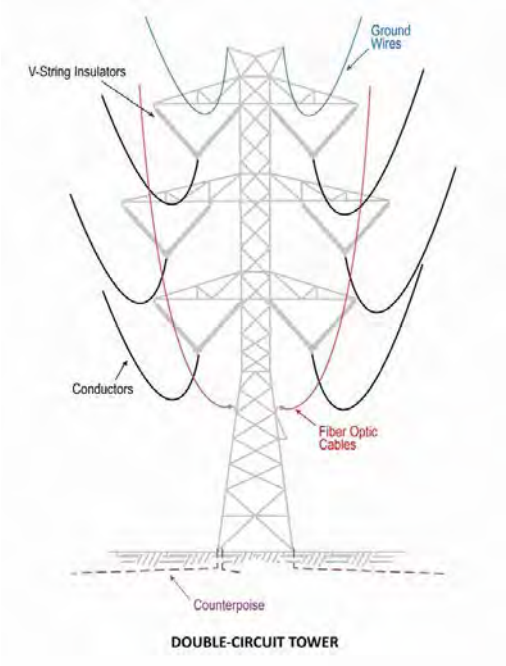


Figure 1: Typical Double Circuit Tower

C. SAVINGS POLICIES

The Management Plan contains savings policies that repeat and respond to direction in the Scenic Area Act that the Management Plan not affect certain uses that take place in the Scenic Area (MP-II-7-2).

Savings Policy 2 states:

> *Lands held in trust by the Secretary of the Interior for Indian tribes or for individual members of Indian tribes, and lands acquired by the U.S. Army Corps of Engineers and administered by the Secretary of the Interior for the benefit of Indian tribes or of individual members of Indian tribes, shall be exempt from regulation under the Management Plan or land use ordinances adopted by counties or the Gorge Commission pursuant to the Scenic Area Act. This exemption shall extend to lands selected by the U.S. Army Corps of Engineers as "in lieu" fishing sites pursuant to Public Law 100-581 before or after the effective date of the Management Plan. For those "in lieu" sites chosen after the effective date of the Management Plan, the exemption shall commence upon selection by the U.S. Army Corps of Engineers.*

Those portions of the proposed project that occur on lands held in trust by the Secretary of the Interior for Indian tribes or for individual members of Indian tribes are exempt and have been excluded from this review. These parcels are identified on the site plans (map sheets) as Bureau of Indian Affairs (BIA). Similarly, those portions of the proposed development contained within the NSA Urban Areas of The Dalles and Wishram are also exempt from review pursuant to Section 6(c)(5)(B) of the Scenic Area Act.

Savings Policy 5 states:

> *The operation, maintenance, and modification of existing transmission facilities of the Bonneville Power Administration shall be exempt from regulation under the Management Plan or land use ordinances adopted by the counties or the Gorge Commission pursuant to the Scenic Area Act.*

As part of the proposed development, some maintenance and modification actions will be necessary such as repair and maintenance to existing access roads. Roads identified for repair and maintenance activities are identified on the submitted site plans (map sheets) to provide contextual information relevant to the proposed project - but are not subject to review. The replacement of culverts are a use allowed outright provided "*the entity or person owning or operating the culvert shall obtain all necessary federal and state permits that protect water quality and fish and wildlife habitat before construction*" (MP, II-7-13). However, the construction of new culverts and armored rock fords are new additions to the existing road facilities and are reviewed for consistency with the Management Plan. The removal of the existing transmission towers; the construction of new towers (and associated footings, counterpoise, and pulling and tensioning sites); and the construction of new roads also must be reviewed for consistency with the Management Plan.

D. LAND USE DESIGNATIONS

Those portions of the project occurring within the National Scenic Area (that are not otherwise exempt from review) will occur on lands designated General Management Area Large-Scale Agriculture. Part II Chapter 1: Agricultural Land contains objectives, policies and guidelines to protect and enhance agricultural lands for agricultural uses. The General Management Area Guidelines contain a reference to Uses Allowed Outright and lists allowed Review Uses specific to the Agricultural Land Use Designations.

1. The uses listed in "Uses Allowed Outright, All Land Use Designations, Except Open Space and Agriculture-Special" (Part II, Chapter 7: General Policies and Guidelines) are allowed without review on lands designated Large-Scale Agriculture or Small-Scale Agriculture and include:

   > *Repair, maintenance, and operation of existing structures, including, but not limited to, dwellings, agricultural structures, trails, roads, railroads, and utility facilities.*

   Maintenance is defined by the Management Plan as "*ordinary upkeep or preservation of a serviceable structure affected by wear or natural elements. Maintenance does not change the original size, scope, configuration or design of a structure. Maintenance includes, but is not limited to…grading gravel roads, and road shoulders, cleaning and armoring ditches and culverts, filling potholes, controlling vegetation within rights of way, and testing and treating utility poles*" (MP, Glossary-12).

   Repair is defined by the Management Plan as "*replacement or reconstruction of a part of a serviceable structure after damage, decay or wear. A repair returns a structure to its original and previously authorized and undamaged condition. It does not change the original size, scope, configuration or design of a structure, nor does it excavate beyond the depth of the original structure…*" (MP, Glossary-16).

   Serviceable Structure is defined by the Management Plan as "*presently usable*" (MP, Glossary – 18).

   Site visits conducted by staff confirm the presently usable condition of the existing access roads intended to be repaired and maintained as part of the proposed development. These roads as well as all other associated access roads are shown on site plans (Appendix A). Because repair and maintenance of existing roads shown on the submitted site plan is consistent with the Management Plan's list of uses allowed outright, it is not subject to review and is only generally described in this consistency review to provide contextual information for a comprehensive overview of the development that will take place within the Scenic Area.

   The replacement of culverts are a use allowed outright provided "*the entity or person owning or operating the culvert shall obtain all necessary federal and state permits that protect water quality and fish and wildlife habitat before construction*" (MP, II-7-13). However, the construction of new culverts and armored rock fords are new additions to the existing road facilities and are reviewed for consistency with the Management Plan.

2. Review uses allowed within the GMA Agricultural land use designation, subject to compliance with the guidelines for the protection of scenic, cultural, natural and recreation resources include Review Use 1(L): construction, reconstruction or modifications of roads not in conjunction with agriculture.

   The transmission line road infrastructure consists of a combination of new and existing roads that will be used to remove the existing towers and replace them with the new towers. Site Plans prepared by BPA were modified to reference all access roads and are included as Appendix A. Almost all of the roads,

except designated routes-of-travel will remain for continued road access. Existing access roads were constructed at the time of the existing line installation and were therefore placed before the formation of the National Scenic Area. These roads have been used for ongoing maintenance of the existing transmission lines and continue to be serviceable structures. Over time, some of the roads have degraded and will require maintenance and repair activities to return them to their original condition to meet BPA standards for the new line. Proposed activities for 22.5 miles of existing and new roads include blading; reshaping for stability and load bearing capabilities; application of dust abatement; surfacing/sub-base work; and addressing any drainage issues to keep them passable during wet soil conditions. These roads are identified on the map sheets as Maintenance or Repair. Embankments, slopes, and cut banks could change from a weathered to fresh appearance.

In addition to the repair and maintenance of existing access roads, eight new sections of road construction (totaling~ 1 mile miles) will be built for the project. As shown on the map sheets, a majority of the new roads are continuations of existing access roads to reach new tower locations within the existing corridor. The Management Plan requires grading plans for development within the General Management Area when the total grading is greater than 200 cubic yards (MP, I-1-11). Three of the eight new roads will involve more than 200 cyd of earthwork and grading plans have been prepared. The other new roads are less than 200 cyd of earthwork and do not require a grading plan. A typical road section diagram has been prepared to demonstrate anticipated cut banks and fill slopes and was included in the application. The site plans also show "routes of travel" which typically consist of temporary roads across a farmer's field (e.g. a portion of Road 07B), county roads, or highways. The Forest Service inspected all roads with BPA engineers on October 12, 2011 to confirm their location and any potential resource impacts, which are discussed below in the scenic, cultural, natural and recreation resource protection sections of this review.

3. GMA Agricultural Review Use 1(X) allows for the removal/demolition of structures that are 50 or more years old.

   BPA has described the existing towers to be removed as older than 50 years old. The proposed development would remove 24 existing 250kV single circuit lattice transmission towers and replace them with 26 larger 500kV double circuit lattice towers (ranging in height from 165 to 408 feet) capable of meeting the regional energy needs. The location of the towers to be removed can be viewed in the map sheets of Appendix A and are shown as an orange box with an "x". Sixteen of the towers to be removed and replaced are located within the Harvalum-Big Eddy No. 1 line and McNary Ross No. 1 line on the Washington side of the Gorge. The remaining seven are located on the Oregon side of the Gorge.

   In areas where the existing Harvalum-Big Eddy and McNary-Ross line will be removed, the existing tower footings will be cut-off two feet below ground or deeper in cultivated areas. If the existing footings interfere with construction of the new line, they will be removed and the excavation will disturb about 0.43 acre. The locations of removed towers will be re-vegetated unless a new tower is placed in same location.

4. GMA Agricultural Review Use 2(A) allows for the installation of "new utility facilities necessary for public service upon showing that (1) there is no practicable alternative location with less adverse effect on agricultural or forest lands, and (2) the size is the minimum necessary to meet the need." This review use is also subject to the protection of scenic, natural, cultural and recreation resources and Approval Criteria for Specified Review Uses listed on page II-1-15 of the Management Plan.

   Approval Criteria for Specified Review Uses proposed use may be allowed only if it meets both of the following criteria: (A) the use is compatible with agricultural uses and would not force a change in or significantly increase the cost of accepted agricultural practices on nearby lands devoted to agricultural

use; and (B) the use will be sited to minimize the loss of land suitable for the production of crops or livestock.

As previously discussed, BPA proposed to replace 24 existing transmission towers with 26 new, larger transmission towers and added a fiber optic cable loop. With the exception of a small re-route to minimize impacts to an existing residence, the proposed development will be limited to the existing easement and transmission line corridor. Currently, the corridor contains 250kV single-circuit towers carrying the Harvalum-Big Eddy Line No. 1 from the Big Eddy sub-station near The Dalles. This line travels east and crosses the Columbia River near Wishram, Washington. The easement increases in width as it joins the McNarry Ross No. 1 line, also a 250kV single-circuit tower, northeast of Wishram. The two sets of towers then travel east in a parallel configuration.

BPA evaluated several siting options and tower configurations in the Final Environmental Impact Statement for the proposed project (FEIS, pages 2-27 to 2-29). The option of adding an additional corridor of single-circuit towers for the BEK line would have resulted in double and triple corridors – utilizing additional agricultural lands. Appendix A contains site plans (maps) depicting the locations of the proposed development – with each tower referenced by number. As proposed, the single-circuit towers of the McNarry-Ross line between tower 10-1 and tower 14/1 will be replaced with double-circuit towers to also hold the BEK transmission line.

As previously mentioned, a one-mile section of the proposed project will be relocated in a new corridor on the Oregon side of the Columbia River crossing (Towers 7/3, 7/4, 7/5). The existing right-of-way will be restored and will have the same result of one corridor through the area. The corridor relocation will have the same numbers of towers within the NSA (three) as it would if it stayed in the existing alignment, but the relocation will have one less tower (and less access road) just south of the NSA for an overall smaller footprint impact.

Depending on the individual tower site characteristics, the double-circuit 500-kV lattice steel towers will range from 165 to 408 feet tall (see Table 3). Factors that determine necessary height include, but are not limited to, the terrain, vegetation, road and river crossings. Spans between individual towers will be approximately 1,150 feet, with about five towers needed for each mile of line. Towers will be made of dulled, galvanized steel. As shown on that site plan, each tower has a tower number assigned for the line mile and tower number within that mile; for example, tower 2/4 is the forth tower in mile 2.

To span the length of the Columbia River (approximately 4,551 feet), additional height is needed. The Oregon tower will be 408 feet tall (Tower 7/5) and the Washington tower will be 237 feet tall (Tower 8/1). Federal Aviation Administration (FAA) requires lighting along the river crossing for aircraft safety. The lighting for Tower 7/5 will consist of two flashing, dual color (white by day/ red by night) beacons and four nighttime, steady-burning red waist lights. The lighting for Tower 8/1 will consist of one flashing, dual color (white by day/ red by night) beacon and two nighttime, steady- burning red waist lights. The lighting will be angled outward and upward to minimize visual impacts to landowners and others on the ground. No towers are proposed to be painted. Additional information and findings of fact regarding materials, reflectivity, color and lighting are discussed in the scenic resource provisions below.

Three different types of tower footings will be used to securely attach the proposed transmission towers to the ground; 1.) Grillage footings (used in most soil types), 2.) Rock anchor footings (used in bedrock), and 3.) Concrete shaft footings (used for river crossing towers and steep slopes). Depending on the type to be used, the footings will be buried up to 16 feet deep, permanently occupy an area of about 0.17 acre, and temporarily disturb about 0.69 acre. See Table 3 and the Footings attachment (07 BEK Footing).

Soil excavated for Grillage Footings will be used to backfill the holes. For rock anchor and concrete shaft footings, the soil will either be spread out onto an approved location or removed from the Scenic Area. In areas where the existing Harvalum-Big Eddy and McNary-Ross line will be removed, the existing tower footings will be cut-off two feet below ground or deeper in cultivated areas. If the existing footings interfere with construction of the new line, they will be removed and the excavation will disturb about 0.43 acre.

To dissipate energy charges from lightning, a series of wires called counterpoise will be buried in the ground at the base of the towers within the transmission line right-of-way. Counterpoise will be needed for 9 of the proposed towers (see the Counterpoise attachment - 08 BEK Counterpoise) based on the soil types present. Up to six aluminum wires (3/8-inch in diameter) could be buried up to 250 feet from the tower. The wire is usually buried 12-18 inches deep, except in cultivated areas where it will be buried about 30 inches deep or deeper if a farmer uses deeper plowing methods. Where there are obstructions, buried utilities, or environmentally sensitive areas, the counterpoise design will be changed to avoid these areas.

Pulling and tensioning sites are areas used for pulling and tightening the conductor and fiber optic cable to the correct tension once they are mounted on the transmission towers. Within the NSA, about three pulling sites will be needed for the conductor and two for the fiber optic cable. If possible, the fiber optic cable will use the same pulling sites as for the conductor. The conductor pulling sites will require a flat area, likely within the existing right-of-way, of about 100 feet wide by 300 feet long (about 0.75 acre) to place a large flatbed trailer that holds the reels of conductor or a tensioning machine. Depending on conditions, the site could be graded, graveled with crushed rock that includes some fines, and reseeded, or a combination of these activities. The pulling will require “snubs,” which are trenches about 8 feet deep by 4 feet wide by 12 feet long (~ 14 cyd) with a wood pole to tie off the line. These trenches will be backfilled following construction.

The pulling site for the fiber optic cable will be about 0.25 acres, located within or adjacent to the right-of-way, and will not use snubs. Making every effort to stay within the existing right-of-way, the construction contractor will determine the appropriate locations for pulling sites using environmental and land use information provided by BPA. If the pulling sites are identified outside of the right-of-way, additional surveys for cultural resources and or flora and fauna could be required for those sites.

Siting and design alternatives explored by BPA to minimize resource impacts included the burial of transmission lines. Unlike lower-voltage distribution cables used to deliver power to individual homes, it is impracticable to underground high-voltage transmission cables. For a 500-kV line, three individual cables would have to be manufactured and installed at a cost about 10 times the cost of an overhead design. In addition, the costs of maintaining an underground high-voltage line is much greater and more difficult, and the environmental impacts are typically greater than impacts from an overhead line.

Underground cables would require three separate continuous concrete encased ducts along the line route to carry the conductors. The ducts would be in trenches dug a minimum of 4 feet wide and 6 to 10 feet deep for the cables. The separate trenches would be needed for each phase to allow for adequate heat dissipation. Every 1,500 to 1,800 feet a 30-foot long, 10-foot deep manhole is installed to allow for splicing and racking the cables.

Undergrounding would impact the entire path of the line (compared to overhead lines which can span sensitive resources such as streams and rivers, wetlands, culture resources, deep ravines, agricultural fields, etc.). An underground crossing of the Columba River would require hydraulic directional drilling, with temporary 800 square foot exit and entry pits, the use drilling fluid and risk of fractures, and a 4 to 5-

acre transition station on either side of the crossing. A permanent cleared corridor between 40 and 100-feet wide would be required, with a continuous parallel access road along the underground line route in order maintain and repair of the cables. Because the cables will be buried, it will be much more difficult to locate failed or damaged cables, and service likely will take weeks or months to restore compared to the hours or days it takes to restore service on an overhead line. With only a few installations throughout the world, underground cable systems have not proven themselves to maintain the high reliability demands of today's electric grids.

Existing agricultural activities in the nearby vicinity consist of livestock grazing (pasture), wheat fields, vineyards and orchards. Cattle grazing on open and fenced grassland areas appear to be the predominant agricultural use in the affected area. Transmission towers lines and overhead transmission lines currently exist in the locations of the proposed development, and thus would not have any new permanent impacts to existing agricultural operations. Temporary impacts might include restricted use of lands during installation and re-vegetation. Permanent impacts would include loss of land used in the footprint of the new towers and any new access roads. Because most new roads are continuations of existing access roads and most new towers will be placed near the existing towers to be removed, and fact that agricultural activities can continue underneath the power lines, the impacts are likely to have little to no effect on agricultural lands or the cost of agricultural practices.

In sum, the proposed development would not force a change in or significantly increase the cost of accepted agricultural practices on nearby lands devoted to agricultural use and has been sited to minimize the loss of land suitable for the production of crops or livestock. Given this information, the proposed development is consistent with the Approval Criteria for Specified Review Uses listed on page II-1-15 of the Management Plan and is therefore eligible for review.

E. Scenic Resources – General Management Area

The Management Plan contains provisions for the protection and enhancement of scenic resources in the NSA including objectives, policies, and guidelines (MP, I-1-2 through 35). Applicable provisions are discussed below.

GMA Overall Scenic Resource Policies:

1. GMA Overall Scenic Resource Policy 1 (MP, I-1-3) states:

   Except for production and/or development of mineral resources and disposal sites for spoil materials from public road maintenance activities, nothing in the key viewing areas or landscape settings guidelines in this chapter shall be used as grounds to deny proposed uses otherwise authorized by the land use designation. However, the guidelines may affect the siting, location, size, and other design features of proposed developments, and compliance with them is mandatory.

2. GMA Overall Scenic Resource Policy 3 (MP, I-1-3) states:

   New development shall be compatible with its designated landscape setting (as described in the "Landscape Settings" section of this chapter). Expansion of existing development shall be compatible with its landscape setting to the maximum extent practicable.

GMA Overall Scenic Resource Guidelines:

3. GMA Scenic Resource Guideline 1 (MP, I-1-3) requires all new buildings and roads to be sited and designed to retain the existing topography and to minimize grading activities to the maximum extent practicable.

   No new buildings are proposed. As previously described, most visible road work will be within the scope of repair and maintenance activities. Eight new roads are proposed to access the tower sites within the existing corridor. New roads will, for the most part, be continuations of existing roads. To minimize grading, new roads will follow the natural grade to the maximum extent practicable. Three of the eight roads will require more than 200 cubic yards of grading (Roads 1a, 7a, 11c). Grading plans and typical cross-sections were submitted for review in the application. All existing and new roads were inspected during an October 12, 2011 field visit. Staff confirmed that the roads were sited to retain the existing topography and minimize grading to the maximum extent practicable, consistent with this guideline. Additional information regarding the proposed roads can be viewed above in Finding D2.

4. GMA Scenic Resource Guideline 3 (MP, I-1-3) states that project applicants shall be responsible for the proper care and maintenance of any planted vegetation required by the guidelines in this chapter.

   The applicant has included a list of project mitigations and has agreed to reseed all disturbed areas (Project Application, Page 24) and prepare and implement a plan to control the spread of noxious weeds (Project Application, Page 25). A condition of approval will be included to ensure the proper care and maintenance of the proposed vegetation mitigation, consistent with this guideline.

5. GMA Scenic Resource Guideline 5 (MP, I-1-4) requires a determination of compatibility of the proposed

development with the landscape setting.

Please see Findings E18 and E28 - E34 below for information regarding the applicable landscape setting guidelines.

GMA KEY VIEWING AREAS POLICIES:

The goal of the Key Viewing Areas provisions is to emphasize the protection and enhancement of Gorge landscapes as seen from key viewing areas (KVAs).

6. GMA Key Viewing Area Policy 4 (MP, I-1-6) states that new utility transmission lines, transportation and communication facilities, docks and piers, and repairs and maintenance of existing lines, roads and facilities shall be visually subordinate as seen from key viewing areas to the maximum extent practicable. Visual subordinance is discussed in Finding E10 and E12 - E15.

7. GMA Key Viewing Area Policy 6 (MP, I-1-6) require projects involving substantial grading on lands visible from KVAs to prepare grading plans that address the visual impacts of grading activities. The policy also requires all graded areas to be re-vegetated to the maximum extent practicable.

   Grading plans were submitted for portions of the development requiring more than 200 cubic yards of grading. These areas are contained within three of the new roads proposed. Typical cross sections of the resulting cut banks and fill slopes were submitted as part of the application. Staff conducted field visits to confirm the potential impacts of grading activities as discussed in findings E12.

8. GMA Key Viewing Area Policy 10 (MP, I-1-7) states that applicable guidelines specified for particular landscape settings shall be used to ensure that new development on lands visible from KVAs is visually subordinate to its setting in a manner responsive to the unique character or that setting. For information regarding applicable landscape setting provisions, please see Finding E18 and E28 - E34 below.

GMA KEY VIEWING AREAS GUIDELINES:

9. GMA Key Viewing Areas Guideline 1(MP, I-1-7) states that the guidelines in this section shall apply to proposed development on sites topographically visible from KVAs.

   According to resource inventories and field work conducted by staff, the proposed development would be topographically visible from Interstate 84 in Oregon, the Columbia River and State Route 14 in Washington and is thus subject to compliance with the following guidelines. While the proposed project is within the “seen area” of the Rowena Plateau/Nature Conservancy Viewpoint, meaning no intervening topography is present, the distance is more than 15 miles and the proposed project is not visible from this distance and is not included in the consistency determination.

10. GMA Key Viewing Areas Guideline 2 (MP, I-1-7) states that each development shall be visually subordinate to its setting as seen from KVAs.

    As previously discussed in Findings E1 and E6 above, nothing in the scenic resource protection guidelines can be used as grounds to deny proposed uses otherwise allowed and new utility transmission lines and facilities (and repairs and maintenance of existing lines, roads and facilities) shall be visually subordinate as seen from key viewing areas to the maximum extent practicable. Please see Findings E12 - E15 for further discussion.

11. GMA Key Viewing Areas Guideline 3 (MP, I-1-7) states that a determination of potential visual effects and compliance with visual subordinance policies shall include consideration of the cumulative effects of proposed developments. Findings for the consideration of cumulative effects to visual resources are reviewed at the end of the Scenic Resource section in Finding E41.

12. GMA Key Viewing Areas Guideline 4 (MP, I-1-7) ensures that the extent and type of conditions applied to a proposed development to achieve visual subordinance are proportionate to its potential visual impacts as seen from key viewing areas. Written findings are required to address factors influencing potential visual impacts. Visually Subordinate is defined as the description of the relative visibility of a structure or use where that structure or use does not noticeably contrast with the surrounding landscape, as viewed from a specified vantage point (generally a key viewing area, for the Management Plan). As opposed to structures that are fully screened, structures that are visually subordinate may be partially visible. They are not visually dominant in relation to their surroundings (MP, G-21). The visual subordinance findings for the Big Eddy Knight Project were evaluated using the entire landscape within the viewshed, not just the immediate landscape surrounding each transmission tower. This is significant because most visual subordinance findings in the General Management Area are for smaller projects such as residential dwellings and agricultural buildings and the surrounding landscape is typically defined as the immediate vicinity of the project. The difference in methodology lies primarily in the scope and scale of the viewshed utilized based on the scale of the proposed development.

    To determine compliance with Management Plan requirements several representative viewpoint locations along the three linear KVAs were analyzed to compare the proposed project to the existing landscape character in terms of scale, size, extent, and the amount of contrast in form, line, color, and texture. This method relies primarily on professional judgment because of the difficulty in quantifying measurements that can be used as thresholds in relation to aesthetics.

    The Big Eddy Knight Transmission Line project has five primary components that may affect visual resources within the CRGNSA: (A) vegetative management within transmission line corridor; (B) access roads; (C) ground clearing activities for counterpoise, pulling and tensioning sites: (D) removal of existing transmission towers; and (E) construction of new transmission towers.

    A. Vegetative management within transmission line corridor

    Within forested areas such as Coniferous Woodland and Oak-Pine Woodland landscape settings of the Columbia River Gorge the single greatest impact to visual resources are the transmission line corridors that have been cleared of their standing trees. Transmission line corridors through forested areas create strong visual lines, forms, and contrast that are seen from many miles and dominate foreground, middleground, and background views. These cleared vegetative corridors have major adverse effects, dominate the landscape, and the landscape character appears heavily altered. These types of transmission line corridors are visually dominant.

    The Big Eddy Knight Transmission line corridor requires no vegetative clearly for the designated right-of-way because of its location within the Grassland Landscape Setting. Compared to a forested setting this removes one of the most substantial effects to visual resources that would typically not meet the requirements of visual subordinance. There are no impacts from vegetative management within the Big Eddy Knight Transmission corridor and impacts are neutral.

    B. Access roads

    The access roads for the Big Eddy Knight project consist of new and existing roads.

    Existing roads identified for maintenance and repair and are not subject exempt from review under the

Management Plan (see Section C – Savings Policies). BPA can maintain and repair these roads under the Savings Provisions (See Section C) and no further review is required, however, they are generally described here to provide contextual information for a comprehensive overview of the development that will take place within the Scenic Area.

Most of the existing roads are not visible from key viewing areas with the exception of a few roads. Visibility is dependent on factors such as intervening topography, extent of proposed maintenance, repair, and construction activities, and viewing distance. Road 11/12/13 and road 13b are the primary access roads for the transmission line and small portions of this road are visible but not dominant from a variety of viewpoints. Maintenance and repair activities to these access roads will have negligible effects to visual resources. Road 09a is an existing road with limited visibility from Highway 84. Maintenance and repair activities will have negligible effects to visual resources and the road meets visual subordinance. Roads 12a - 12e and 14a are existing road spurs that provide access to the towers. Grading is minimal and the maintenance and repair activities will meet visual subordinance.

New roads include portions of 01a; 07a; 07b; 09c; 09d; 10a; 11b; and 11c. New construction ranges from minimal grading to full road development with greater than 200 cyd total construction. Roads 01a, 07a, 11c have greater than 200 cyd and grading plans have been repaired and reviewed by the Forest Service.

New road construction for road 01a is not visible from a KVA and a grading plan was prepared. Roads 07a and 07b might be visible from SR 14 for very limited durations but will be visually subordinate because of the partial screening of topography and viewing distance. A grading plan has been prepared for 07a but not 07b. Road 07b is an existing road being re-routed along a fence line so it is considered new construction. Minimal grading will occur for the re-route and a grading plan is not required.

Roads 09c and 09d are existing roads that are primarily two-tracks used by the local landowner. Immediately beneath the powerlines the roads are more established. Since the portions of these roads that consist of two-tracks are being upgraded to a substantially higher level they are considered new construction for this review. They are located on level ground and activities will consist of minimal grading. They might be visible from I84 for very limited duration and will meet visual subordinance because of the partial screening of topography.

Road 10a has a very small portion of new road development located on or near the property boundary with BIA land. The new portion is less than 100 feet in length and involves less than 200 cyd in total grading. Road 10a has very limited visibility from SR14 and meets visual subordinance because of the limited viewing, viewing distance and partial screening of topography.

Road 11a, 11b, and a small portion of 11c are visible from the foreground of Highway 14. Road 11a is an existing access road in the right-of-way corridor that meets the definition of the savings clause and is not reviewed under the management plan. As currently constructed the road borrows from the form of the existing landscape and meets visual subordinance. Maintenance activities will have negligible effects to visual resources. Road 11b is an existing access road which will need to be extended a short distance (< 50 feet?) to build tower 11/1. With approved mitigations to revegetate any cut and fill slopes this small section will meet the requirements of visual subordinance to the maximum extent practicable. A portion of road 11c is a new access road and a grading plan has been prepared. None of the new road is visible from Highway 14, is screened by topography, and meets visual subordinance. Only a small portion of the existing road is visible near tower 11/4.

A condition of approval will include that all cut and fill slopes and other ground disturbance from new road construction shall be reseeded with the approved native seed mixture attached to this decision no later within 1 year of the ground disturbance. Any deviations from this seed mix will require approval of the Forest Service.

Table 1 – Access Roads and visibility from Key Viewing Areas

Map Sheet	Road	Status	>200 CYD	Visible From KVA [1]	Buffer Zone Entry	Notes
01	01A	New	Yes	No	-	Grading Plan prepared
07	07A	New/ Existing	Yes	C?SR14/I84?	-	Grading Plan prepared for section from 17/2 to 7/4
07	07B	New/ Existing	No	C?/SR14/I84?	Yes	Repair, two gates. Small portion is new but requires minimal grading. Buffer zone entry for route of travel to tower 17/1.
09	09A	Existing	-	I84	Yes	Maintenance, one gate
09	09B	Existing	-	I84?	Yes	Maintenance and repair
09	09C	New/ Existing	No	I84?	-	Two-track. Flat topography with minimal grading. Grading plan not required.
09	09D	New/ Existing	No	I84?	Yes	Flat topography with minimal grading
10	10A	Existing/ small portion is new	No	SR14/I84	-	Repair, Less than 100 feet leading is new construction but less than 200 cyd. Location is at boundary between BIA and private land.
11	11A	Existing	-	C/SR14/I84	-	Maintenance.
11	11B	Existing/ small portion is new	No	C/SR14/I84	-	Repair, extension is new construction but less than 200 cyd
11	11C	New/ Existing	Yes	SR14/ I84?	-	Grading Plan prepared for new portion that connects with original spur. Only very small portion of existing road is visible from Highway 14 near tower 11/4.
11,12, 13	11/12/ 13	Existing	-	C/SR14/I84	Yes	Primarily maintenance with some sections requiring repair. Existing power line corridor road. Various portions visible from KVA.
12	12A	Existing	-	I84?	-	Repair, Short spur, minimal grading
12	12B	Existing	-	I84?	-	Repair, Short spur, minimal grading
12	12C	Existing	-	I84?	-	Repair, Short spur, minimal grading
12	12D	Existing	-	I84?	-	Repair, Short spur, minimal grading
12	12E	Existing	-	I84?	-	Repair, Short spur, minimal grading
12	12F	Existing	-	I84?	-	Repair, minimal grading
13	13A	Existing	-	I84?	-	Repair, minimal grading
14	14A	Existing	-	I84?	-	Repair, minimal grading

[1] Key Viewing Areas include: C – Columbia River, SR14 – State Route 14, I84 - Interstate 84. Visibility is dependent on factors such as intervening topography, extent of proposed maintenance, repair, and construction activities, and viewing distance.

C. Ground clearing activities for towers, counterpoise, conductor and fiber optic pulling and tensioning sites

The removal and construction of the towers will require ground clearing to excavate the soil to place tower footings, place the counterpoise, and the pulling/tensioning sites. The total permanent ground disturbance is 0.17 acres for each of the 26 tower sites. With the removal of old towers and the creation of new towers the effects to visual resources from this ground disturbance is neutral. The ground disturbance will primarily be visible within the foreground of Highway 14 near towers 11/1 and 11/4; and the foreground of Highway 84 near tower 8/1. This ground disturbing activities will create short term, minor adverse impacts. With reseeding and planting of the native vegetation the long term impacts are negligible.

Table 2 - Types of Disturbance	Acres Disturbance
Permanent Tower Foot Print	0.17
Temporary disturbance during tower construction	0.52
Total Tower Disturbance	0.69
Temporary Counterpoise Disturbance	0.09
Temporary disturbance – Conductor Pulling/ Tensioning Site	0.75
Temporary disturbance – Fiber Optic Pulling/Tensioning Site	0.25

D. Removal of existing transmission towers

The removal of the existing transmission towers has negligible impacts to visual resources because they are being replaced with another set of transmission towers. The re-routing of transmission line corridor for tower's 7/2; 7/3; 7/4; and 7/5 will remove one transmission line tower from the landscape and will have a beneficial, but negligible effect to visual resources, because most visitor will not see any significant change to the landscape.

E. New transmission towers

Although individual towers may meet visual subordinace within the context of the entire viewshed from select viewpoints in the middleground or background, the proposed transmission line will not be visually subordinate as seen from all KVAs. They are however, designed and sited to achieve visual subordinance to the maximum extent practicable, consistent with Policy 4 (MP, I-1-6).

Table 3 below shows the height of each proposed tower, the distance and number of KVAs from which it is visible, and compliance with visual subordinance. Topographic variation provides intermittent screening to viewers in the foreground, middle and background. The three KVAs are linear features that following the winding alignment of the Columbia River Gorge so towers will be screened based on their visibility from specific points in the KVA. Due to the height of the structures, no vegetation is able to provide screening.

Towers 1/3 and 1/4 are partially screened by topography as seen from Interstate 84 and State Route 14. These towers will be visible but difficult to distinguish because of the number of towers that surround the Big Eddy Knight substation. They will not dominate the landscape and meet all requirements of visual subordinance.

Views from Columbia River are generally long in duration and the effects to visitors are much greater. Towers 7/3 to 9/4 for the Columbia River crossing have the greatest effect to visual resources because of their close proximity to Interstate 84, State Route 14, and Celilo Park where many boaters access this portion of the Columbia River.

Visitors traveling on Interstate 84 have middleground to background views for a length of ~ 8 miles of the transmission line. The greatest impacts are near the Columbia River crossing approximately for towers 8/1 to 9/4 located in Washington. They are the closest to the interstate and visible to both east and west bound traveling traffic.

Visitors traveling along State Route14 can intermittently view the proposed towers over a length of ~ 8 miles in the immediate foreground, middleground and background views. The towers closest to Highway 14 (Towers 9/6, 10/1, 10/2 and 10/5) are located on Tribal Trust Land and are exempt from NSA review.

Towers 7/3 to 8/1 (looking to Oregon) are highly visible from a number of different viewpoints for both west and east bound travelers and have strong visual impacts. Tower 11/1 and 11/4 are located the closest to Highway 14 and strong visual impacts for both west and east bound travelers. The remaining towers of 12/1 to 13/4 have intermittent middleground views from State Route 14 and their close proximity creates strong visual impacts to visitors traveling east and west.

The degree of visual subordinance depends primarily on the viewing distance and the duration of the view of the particular viewpoint within the KVAs (Tables 3). New transmission towers which impact at least two different KVAs include towers 7/3; 7/4; 7/5; 8/1; 9/1; 9/2; 9/3; and 9/4. Tower 8/1 is visible from three different KVAs and has the greatest impact to visual resources because of the large size of the tower (237 feet). Tower 7/5 is 408 feet tall and will clearly impact views from Celilo Park as well as SR 14.

Table 3: Towers and visibility from Key Viewing Areas

Tower Number	New Towers	Old Towers	Columbia River (viewed from Celilo Park)		SR-14		I-84	
	Height (ft)	Height (ft)	Viewing Distance	Visually Subordinate	Viewing Distance	Visually Subordinate	Viewing Distance	Visually Subordinate
1/3	213.5	89	MG	Yes	MG	Yes	MG	Yes
1/4	218.5	117	MG	Yes	MG	Yes	MG	Yes
7/3	185	67	MG	No	MG-BG	No	-	-
7/4	222	83	MG	No	MG-BG	No	-	-
7/5	408	192	MG-BG	No	MG-BG	No	-	-
8/1	237	191	FG -BG	No	MG-BG	No	MG-BG	No
9/1	190	No	FG	No	-	-	MG-BG	No
9/2	165	93	MG	No	-	-	MG-BG	No
9/3	175	83	MG	No	-	-	MG-BG	No
9/4	195	No	MG	No	-	-	MG-BG	No
10/3	175	65	MG	No	MG-BG	No	MG-BG	No
10/4	195	85	MG	No	MG-BG	No	MG-BG	No
11/1	240	89	MG	No	FG-BG	No	MG-BG	No
11/4	175	75	MG	No	MG-BG	No	MG-BG	No
12/1	190	67	MG	No	MG-BG	No	MG-BG	No
12/2	180	64	MG	No	MG-BG	No	MG-BG	No
12/3	165	73	MG	No	FG-BG	No	MG-BG	No
12/4	185	83	MG	No	FG-BG	No	MG-BG	No
12/5	185	84	MG	*	FG	No	MG	No
12/6	183.5	85	MG	*	FG	No	MG	No
13/1	180	71	MG	*	FG	No	MG	No
13/2	160	70	MG	*	FG	No	MG	No
13/3	185	66	MG	*	FG	No	MG	No
13/4	195	73	MG-BG	*	FG	No	MG-BG	No
13/5	195	72	MG-BG	*	-	-	MG-BG	No
14/1	185	96	MG	*	-	-	MG	-

FG = Foreground (within 1/4 mile for Scenic Travel Corridors)
MG = Middle Ground (between 1/4 mile and 3 miles); and
BG = Back Ground (more than 3 miles away)
- = Not visible
* = Towers 12/5 – 14/1 are not visible from Celilo Park which was used to assess views from the Columbia River. West of Miller Island these towers would be visible and visual effects would be similar as seen from Highway 84 and not meet visual subordinance unless screened by topography

13. Guideline 4 (MP, I-1-7) also states that conditions may be applied to elements of the proposed development to ensure they are visually subordinate to their setting as seen from KVAs (to the maximum extent practicable) and include, but are not limited to siting; retention of existing vegetation; design (including color, reflectivity, size, shape, height, architectural design details and other elements), and new landscaping.

    BPA's Final EIS evaluated three different siting alternatives (west, middle, and east) for the location of the proposed project. The west and east alternatives would have created new right-of-ways for the locations of the transmission towers and thus created new disturbed areas for new towers and roads. The visual resource impacts associated with new corridors would have been high. With the selection of the east alternative BPA also evaluated whether or not to add an additional transmission line to the existing right-of-way. The result would have been double and triple-wide transmission corridors with many new towers in addition to what currently exists. Instead, BPA has proposed replacing existing towers to consolidate transmission lines onto fewer, albeit taller, towers. When considering the alternative, fewer towers will have a lesser impact on scenic resources than in some locations, triple-wide transmission corridors. The proposed towers will be larger than the existing towers and therefore more visible, but will have a similar impact to views because they will have a similar construct and will utilize most of the same access roads.

    Tables 1 and 3 shows the proximity of the proposed towers and associated roads to affected KVAs. Confirmed in field by staff, foreground views (within ¼ mile) of the development are heavily intermittent due to intervening topography. Views of development in the middle ground and background are more consistently within the view of travelers, but the distance enables the lattice-style towers to blend into the backdrop of the Columbia Hills.

    The design of the towers emphasizes the use of a lattice framework. Existing towers are of similar design are present throughout the Columbia River Gorge and are somewhat successful at blending into the background when viewed from KVAs. The ability for the background landscape features to show through the lattice, allows the structure to more easily blend in with the surrounding landscape by minimizing the impact of form and line of the towers (compared to solid monopoles where effects of line and form are not mitigated).

    The towers are made of dulled, galvanized steel; conductors are porcelain and non-reflective; and the conductors (the wires that carry electrical current on the transmission line) are dark gray. The galvanized towers are a gray earth tone in color and will weather to a dark earth tone over time. Towers proposed for the Columbia River crossing (towers 7/5 and 8/1) will not be painted red and white as with most large crossings and will instead remain the dull, galvanized finish. The size and height of the towers are based on the topography, weight of the conductors, distance of spans (gorge, river, etc.), and other engineering requirements.

    While color is an effective way to mitigate impacts to visual resources there are a number of maintenance and environmental issues from painting towers because the paint will flake and chip over time. Flaking can occur during construction as the towers are being climbed and worked on. Flaking also occurs naturally from weathering and is deposited at the base of the tower and adjacent landscapes from wind.

The use of the dulled, galvanized gray steel, is extremely effective when towers break the skyline and the sky becomes the background. The neutral color mitigates the visual impacts of the skyline break and effectively minimizes visual resource impacts for variable factors such as changing light and atmospheric conditions. Where the tower does not break the skyline the gray color will also blend in with the naturally created shadows present in the landscape from topographic variation, changing light, and the changing weather conditions. The use of the dulled galvanized towers are an effective solution to mitigate visual resource impacts where the towers break the skyline and in areas such as the Columbia River Gorge with its continually changing light and weather conditions.

All objects in a landscape indirectly or directly reflect light and their form, line, color, or textures are revealed through the contrast between the different surfaces. The effects of light are continually changing over the course of the day, season to season, and changing atmospheric conditions. Back lighting, front lighting, or side lighting can create areas of shadows, obscure or enhance viewer visibility, or change the dominance of viewed objects. Atmospheric and weather conditions vary greatly and can impact of form, line, color, and texture is reduced by clouds, fog or smog, precipitation, and wind motion. (Summarized from 1973, USDA, National Forest Landscape Management Volume #1, page 51 – 54).

New landscaping is not an applicable condition due to the requirements of the grassland landscape setting and impracticability of using landscaping to ensure visual subordinance of large transmission towers (see findings E12).

In sum, the proposed siting, location, design, colors, materials, vegetation, visibility from and impacts to views experienced from KVAs were evaluated to address the visual impacts the proposed development to KVAs. As proposed, the development has been designed and sited to be visually subordinate to the maximum extent practicable.

14. Pursuant to GMA Key Viewing Areas Guideline 5 (MP, I-1-8), new development shall be sited to achieve visual subordinance from key viewing areas, unless the siting would place such development in a buffer specified for protection of wetlands, riparian corridors, sensitive plants, or sensitive wildlife sites or would conflict with guidelines to protect cultural resources. In such situations, development shall comply with this guideline to the maximum extent practicable.

    With one exception, none of the proposed replacement towers are sited within a natural resource buffer zone. The only road to encroach upon a sensitive natural resource buffer is a temporary route of travel (road 07b) necessary for the removal of a tower (tower 17/1). As proposed, a wetland buffer will be crossed by a portion of the temporary road. Because no other points of access are feasible for the removal of the existing tower and no other resource buffers would be affected, the development has been sited to comply with this guideline to the maximum extent practicable, consistent with Guideline 5. Road 09d also passes through a wetland buffer, is not visible from a KVA and has been sited to meet Wetland Standards and Guidelines. Please see Findings G4.

15. GMA Key Viewing Areas Guideline 6 (MP, I-1-8) requires new development to be sited using existing topography and/or existing vegetation as needed to achieve visual subordinance from key viewing areas.

    As proposed, the replacement towers will be constructed within the corridor of the existing transmission lines. Intervening topography provides screening to some views, particularly in the foreground. Due to the open nature of the eastern gorge landscape and the scale of the proposed development, topography and vegetation are not able to assist in reaching visual subordinance. The number of towers were minimized

and sited to be visually subordinate as seen from key viewing areas to the maximum extent practicable consistent with Policy 4 in Finding E6 above.

16. GMA Key Viewing Areas Guideline 7 (MP, I-1-8) states that existing tree cover screening proposed development from key viewing areas shall be retained as specified in the Landscape Settings Design Guidelines section of this chapter.

    Landscape setting provisions applicable to vegetation retention encourage the retention of existing vegetation capable of providing screening to views from KVAs. Staff conducted a site visit on October 12, 2012 to confirm site characteristics, including existing vegetation. Approximately 20 cherry trees located adjacent to tower 23/5 are proposed to be removed to allow for the construction of tower 1/4. Due to the scale of the proposed development, the cherry trees do not provide screening to views from KVAs. Given this information, the removal of vegetation necessary for development is consistent with Guideline 7. Additional discussions pertaining to Landscape Setting Guidelines are discussed below in Findings E18 and E28 - E34.

17. GMA Key Viewing Areas Guidelines 8 and 9 (MP, I-1-8) contain requirements for new or altered buildings that protrude above a skyline, bluff or ridge. Because no new buildings are proposed, the guidelines do not apply.

18. GMA Key Viewing Areas Guidelines 10 and 11 (MP, I-1-9) contain guidelines for new landscaping used to screen development from KVAs. As previously discussed, the size of the towers (greater than 200 feet) and scale of the project (several miles) do not allow for existing or proposed vegetation (mature heights of 100 feet) to screen views from KVAs. Safety requirements may also require nearby vegetation to remain under a certain height. Additionally, the grassland landscape setting design guidelines state that the planting of trees for screening shall not be extensive and is in character with the openness of the grassland setting. Planting several miles of 100+ tall trees would not be consistent with the existing landscape and would not help the development achieve visual subordinance. Given this information, no new landscaping will be required to provide screening from KVAs.

19. GMA Key Viewing Areas Guideline 12 (MP, I-1-9) requires the colors or structures visible from KVAs to be a dark earth-tone found at the site or in the surrounding landscape. As proposed, the replacement towers will be a dull-finish galvanized steel. The gray finish will continue to darken as it weathers. BPA provided information demonstrating that painting each tower a dark earth-tone color upfront was not a feasible option (For further information see Findings E12). As proposed, the dull-finish galvanized steel (gray) towers will weather to a darker earth-tone color over time consistent with this guideline. A condition of approval will be included in this decision to require any ancillary structures such as access road gates, to be painted a dark earth-tone color.

20. GMA Key Viewing Areas Guideline 13 (MP, I-1-9) requires the exterior of buildings visible from KVAs to be composed of non-reflective materials or materials with low reflectivity, unless topographically screened. No new buildings are proposed by BPA. Although the towers will have a dull finish to reduce visual impacts, this guideline does not apply.

21. GMA Key Viewing Areas Guideline 14 (MP, I-1-9) requires information for new buildings visible from KVAs including height, shape, materials, exterior lighting, and any proposed landscaping. As previously noted above, no new buildings are proposed by BPA as part of this project. The replacement towers will be taller than the existing towers (see Table 2 for tower heights), will have a dull-finish and will be gray, weathering to a darker gray overtime. No new landscaping is proposed due to the scale of the development.

22. GMA Key Viewing Areas Guideline 16 requires all exterior lighting to be directed downward and sited, hooded and shielded such that it is not highly visible from KVAs. It also states that shielding and hooding materials should be composed of non-reflective, opaque materials. Lighting is required by the Federal Aviation Administration between the towers that cross the Columbia River. The lighting for Tower 7/5 will consist of two flashing, dual colored (white at night and red during the day) beacons and four nighttime steady-burning red waist lights. The lighting for Tower 8/2 will consist of one flashing, dual colored beacon and two nighttime steady-burning waist lights. A condition of approval will require BPA to minimize visual impacts to views experienced from KVAs to the maximum extent practicable, consistent with Scenic Policy 4 (see Finding E6).

23. GMA Key Viewing Areas Guideline 19 (MP, I-1-10) states that new main lines on lands visible from KVAs shall be built in existing transmission corridors unless it can be demonstrated that the use of existing corridors is not practicable. Such new lines shall be underground as a first preference unless it can be demonstrated to be impracticable.

    As previously mentioned in Finding E13 above, BPA's Final EIS evaluated three different siting alternatives (west, middle, and east) for the location of the proposed project. The west and middle alternatives would have created new right-of-ways for the locations of the transmission towers and thus created new disturbed areas for new towers and roads. The eastern option was chosen in part to utilize an existing corridor. Although a one-mile segment will be re-located to reduce impacts to an existing dwelling located very close to an existing tower, the existing right-of-way will be restored and will have the same result of one corridor through the area. With this one exception, the proposed replacement towers will occur within an existing corridor, minimizing scenic resource impacts and road development, and remove an existing tower from a wetland buffer zone. Unlike low-voltage distribution cables used to deliver power to individual homes, it is impracticable to underground high-voltage transmission cables due to the high level of excavation required (and resulting resource impacts), difficulty of maintenance and substantial increase in cost (see Finding D4 for additional information). As proposed, the replacement transmission towers will be constructed in existing transmission corridors to the maximum extent practicable, consistent with Guideline 19.

24. GMA Key Viewing Areas Guidelines 20, 21 and 22 (MP, I-1-11) require new communications facilities, overpasses, safety and directional signs, and other road and highway facilities that protrude above the skyline as visible from a KVA to minimize visual impacts by showing that the structure is necessary for public service, and the break in the skyline is the minimum necessary to provide the service. No new communications towers are proposed and no proposed road related development will break the skyline as visible from KVAs. The proposed development is consistent with these guidelines.

25. GMA Key Viewing Areas Guideline 23 (MP, I-1-11) states that except for water-dependent development and for water-related recreation, development shall be set back 100 feet from the normal pool elevation of the Columbia River (above the Bonneville Dam) unless the setback would render the property unbuildable (in such cases a variance may be authorized). As proposed, Tower 8/1 and Tower 7/5 are located closest to the Columbia River and are approximately 600 and 1500 feet respectively from the normal pool elevation. Given this information, the proposed development is consistent with Guideline 23 for the protection of the shoreline of the Columbia River.

26. GMA Key Viewing Areas Guidelines 24 and 25 (MP, I-1-11) discourages the construction of new buildings on slopes visible from KVAs that exceed 30 percent and encourages new buildings and associated driveways to be sited and designed to minimize the visibility of cut banks and fill slopes. Because no new buildings are proposed, these guidelines do not apply. However, it should be noted that

replacing the existing towers in an existing towers enables BPA to use many existing roads, reducing number of visible cut banks and fill slopes that would otherwise be visible in if a new corridor had been developed. Additional information pertaining to the grading that will be necessary is discussed below in Finding E27.

27. GMA Key Viewing Areas Guideline 26 (MP, I-1-11) requires grading plans for structural development involving more than 200 cubic yards of grading on sites visible from KVAs. Many of the access roads to be utilized are existing, but will require repair and maintenance activities such as slope stabilization, culvert cleaning and installation, seeding and mulching. Staff visited the proposed development site on October 12, 2011 and walked locations proposed to be developed. As a result, it was determined that very few portions of the project exceeded 200 cubic yards of grading. Grading plans were submitted for roads 01a, 07a, and 11c and were included in the application.

    New towers will be attached to the ground with footings. Four types of footings will be used, based on individual site characteristics and limitations, including plate footings, grillage footings, rock anchor footings and concrete shaft footings. BPA provided the following information:

    "Plate footings are used for suspension towers. A plate footing is 4'x4' steel plate buried 11 feet deep at the foot of each tower leg. The overall area excavated for a tower will be up to 60'x60'.Grillage footings are used for dead-end towers. A grillage footing is a 15'x15' assembly of steel I-beans that have been welded together and buried up to 16 feet deep at each tower foot. The overall area excavated for grillage footings will be 75'x75'. Rock anchor footings are required when a tower is built on solid bedrock that is less than two feet below the surface. Six-inch diameter holes are drilled into the bedrock about 11 feet deep and steel anchor rods are secured within the hole with concrete. The area of impact will slightly less than for the plate footings. Concrete shaft footings are used for towers at river crossings, on steep slopes, or in areas where the tower must sustain a higher load and requires additional support. Concrete shaft footings can be built on solid bedrock on in soils unfavorable for grillage footings. Concrete shaft footings are engineered columns of concrete up to eight feet in diameter reinforced by steel rods. Footing depth depends on site specific engineering requirements including terrain and load on towers. Total disturbance for these footings will be more than the plate footings".

    Please see Table 2 for a table describing the extent of tower related ground disturbance.

    Counterpoise, buried lines to dissipate lightening charges into the earth, will also be required for many, if not most of the towers (soil dependent). Counterpoise lines consist of up to six 3/8-inch diameter lines buried 12-18 inches deep and up to 250 feet from the tower. Pulling and tensioning sites will also require some grading to ensure level areas for flatbed trailers.

    Revegatation will be accomplished using a native seed mix listed below, which will be applied either by broadcast, drilling, or hydroseeding, depending on the specific site conditions. Based on the October 12, 2011 field inspection bitterbrush has been added to the permanent seed mix. Following construction, seed will be applied during the optimal seeding window for the area which is October 15-November 15. Because seed will be applied during the optimal seeding window, irrigation is not considered necessary. Re-growth will be monitored until non-rocky sites reach a minimum of 70% re-growth of the original vegetation cover. BPA has agreed to use the following seed mix.

    - Bluebunch wheatgrass or beardless wheatgrass – 16 lbs/ac
    - Thickspike wheatgrass or Sandberg bluegrass – 16 lbs/ac Big bluegrass
    - Big bluegrass – 2 lbs/ac

- Native legume – 4 lbs/ac
- Bitterbrush– to be determined
- Total - – 26 lbs/ac[1]

[1]Drilled seeding rates are given (lbs/ac); double seed rates if broadcast or hydroseeded.

BPA is working under a National Pollution Discharge Elimination System Construction Permit and is implementing a Storm Water Pollution Prevention Plan that stipulates site specific Best Management Practices which will be used to control erosion during and after construction according to the Eastern Washington Storm Water Management Manual. Temporary measures that may be used include filter fence, straw waddles, surface roughening, temporary seeding, mulching and matting. Permanent measures include rocking of roads, recontouring rocky areas to minimize slope and monitoring disturbed areas until final stabilization is achieved (final stabilization: re-establishment of 70% of original vegetation cover in non-rocky areas).

A condition of approval will be included in this decision to require that all areas of ground disturbance created during the proposed project will be reseeded with the seed mix described in this decision. Any deviations from this seed mix will require approval of the Forest Service.

GMA LANDSCAPE SETTINGS POLICIES:

Applicable goals of the Landscape Setting provisions include: maintain the diversity of Gorge landscapes; protect and enhance the Gorge's scenic beauty; and retain the existing character of rural landscapes.

28. GMA Landscape Setting Policy 1 (MP, I-1-14) states: "*New developments shall be compatible with their landscape setting and maintain the integrity of that setting. Expansion of existing developments shall be compatible with their landscape setting and maintain the integrity of that setting to the maximum extent practicable"*.

A small portion of the proposed development, Towers 1/3 and 1/4 and Road 01a**,** will occur in the Pastoral landscape setting while the majority will occur in the Grassland landscape setting. Findings of consistency with applicable landscape setting guidelines are included below.

29. The Management Plan describes the Pastoral setting as "*essentially agrarian in character, typified by areas of pastures and intensive agriculture…*" Landforms are described as "*…level ground or gently rolling terrain… benches atop steep slopes that form the walls of the Gorge…"* Vegetation is described as "*Non-native vegetation… include alfalfa fields and irrigated pasture, vineyards and fruit orchards, row crops, hedgerows and poplar rows. Scattered woodlots interspersed…reflect the natural vegetation… (e.g. Oregon oak and ponderosa pine in the eastern Gorge…"* (MP, I-1-15).

GMA LANDSCAPE SETTINGS GUIDELINES:

30. GMA Pastoral Landscape Setting Design Guideline 1 (MP, I-1-16) encourages new accessory structures, outbuildings and access ways to be clustered together as much as possible, particularly towards the edges of existing meadows, pastures, and farm fields. Towers 1/3 and 1/4 and Road 01a are located in the Pastoral Landscape Setting. No new buildings or accessory structures are proposed. Towers and roads will utilize an existing transmission corridor to cluster impacts with existing transmission line development as much as possible, consistent with this guideline.

31. GMA Pastoral Landscape Setting Design Guideline 2 (MP, I-1-16) requires existing tree cover screening the development from KVAs to be retained except as necessary for site development. New landscaping is

encouraged to retain the open character of the existing pastures and fields, and is also required to be at least half native species and at least one quarter coniferous. As previously discussed, cherry trees that do not provide screening, will be removed to facilitate development. Due to the size of the towers and the scale of the project, no new vegetation would be capable of providing screening. Additionally, the addition of several miles of 100-foot tall trees would not be consistent with the character of the existing landscape, likely would not survive and may conflict with corridor vegetation management requirements for public safety. As proposed, the development will be consistent with the Pastoral Landscape Setting Guidelines.

32. The Management Plan describes the Grassland setting as: *"…large expanses of generally treeless grass and shrub-covered hills and terraces. It covers most of the eastern…Scenic Area…The dominant land use is cattle ranching, with widely scattered residences...and structures associated with ranching. Land holdings are relatively large commonly ranging from several hundred to several thousand acres in size. The long, unbroken vistas and relatively sparse settlement patterns give it a dramatic, panoramic character distinct from the rest of the Gorge*." Landforms are described as: *"…gentle to steeply sloping hillsides and relatively level terraces in the eastern Gorge…distinctive hummocky terrain of some areas of "biscuit scablands" near Dallesport….rugged rocky cliffs along the Columbia River also occur*." Vegetation is described as: "*Grasses, shrubs, and forbs are predominant in this mostly treeless setting. Introduced grass species cover most of the rangelands with bitterbrush and sagebrush shrub land occurring in some areas...rare plant species are found in a few areas of scablands and vernal ponds. Oregon white oak stands grow in some of the intermittent stream drainages. A few tree species have been widely planted as windbreaks and are naturalized to the area particularly black locust and poplar. A few vineyards and orchards have been planted in the lower terraces of this setting*." (MP, I-1-19).

33. GMA Grassland Landscape Design Guideline 1 (MP, I-1-20) contains provisions similar to the Pastoral landscape design guidelines, and requires new accessory structures, outbuildings, and associated access ways to be clustered together as much as possible – except where necessary for farming operations. No new buildings or accessory structures are proposed. Towers and roads will utilize an existing transmission corridor to cluster impacts with existing transmission line development as much as possible, consistent with this guideline.

34. GMA Grassland Landscape Design Guideline 2 (MP, I-1-20) discourages the planting of excessive vegetation unable to tie into nearby natural features in order to retain the openness of the landscape character and instead emphases the use of siting and design to achieve visual subordinance from KVAs. Structures are required to be sited on portions of the property that afford the maximum screening, using existing topography where possible. Lower structures that emphasize sweeping horizontal lines found in the landscape are encouraged over tall structures. As previously discussed in Finding E.6 above, Scenic Resource Protection Policy 4 requires new transmission lines and associate development to be visually subordinate as seen from KVAs to the maximum extent practicable. The size and design of the towers are necessary to provide the service and maintain public safety. New towers are proposed to occur in an existing corridor, replacing existing towers to co-locate transmission lines, utilize existing access roads and minimize impacts to all affected resources by minimizing ground disturbance in areas not previously disturbed. The towers will be a dull-finish galvanized steel lattice design, and will weather to a dark gray color. The lattice structures are designed to be visually subordinate to the maximum extent practicable. No new vegetation is proposed for the reasons previously described above, consistent with the Grassland landscape setting.

GMA SCENIC TRAVEL CORRIDORS OBJECTIVES AND POLICIES:

Scenic Travel Corridors are specifically designated to be managed as scenic and recreational travel routes

(MP, Glossary 17). State Route 14 and Interstate 84 are designated scenic travel corridors and KVAs within proximity of the proposed development. Applicable provisions from this chapter are discussed below.

35. GMA Scenic Travel Corridor Objectives 4 (MP, I-1-30) and Policy 8 (MP, I-1-32) encourage utility companies to place powerlines underground where such features are visually dominant and detract from the visual quality of scenic travel corridors. As previously described above, undergrounding high-voltage transmission lines is not a feasible option for the scale of the proposed development. The level of excavation necessary to bury several miles of these transmission lines would be extensive, running the entire length of the corridor, and would have a high probability of affecting sensitive natural and cultural resources. Undergrounding would also impact existing agricultural activities by limiting access and preventing ground disturbance such as plowing or tilling above the lines. Additionally, buried lines are problematic to maintain and cost almost ten times as much to install.

36. GMA Scenic Travel Corridor Policy 11 (MP, I-1-32) states that new road cuts shall be contoured to approximate a natural-appearing grade and vegetated with species native or naturalized to the area in order to blend with the landscape setting. As previously discussed, most of the access roads utilized by the proposed development are existing roads that will be repaired and maintained. The repair activities may cause the roads cuts to appear fresh, but they are in fact existing and as previously discussed in this decision, their repair are allowed without review. In addition to the repair of existing roads, there are also spur roads to tower. These are existing roads that will require repair and maintenance to access the slightly different locations of the replacement towers. Only three sections of roads require extensive grading and are >200 cyd. Grading plans and typical cross sections were submitted for review and staff conducted site visits to verify impacts. Based on a review of the grading plans and the site inspection of October 12, 2011 the three new road cuts have been designed to the maximum extent practicable to meet a natural appearing grade.

GMA SCENIC TRAVEL CORRIDORS GUIDELINES:

37. GMA Scenic Travel Corridor Guideline 1 (MP, I-1-32) states "*For the purpose of implement this section, the foreground of a scenic travel corridor shall include those lands within ¼ mile of the edge of pavement of the scenic travel corridor"*. State Route 14 and Interstate 84 are scenic travel corridors affected by the proposed development. Table 3 illustrates the proximity of each tower to these designated areas as well as the Columbia River.

38. GMA Scenic Travel Corridor Guidelines 2 (MP, I-1-32) and 3 (MP, I-1-33) provide guidance for new buildings and additions to existing buildings (and parking areas) within the foreground of scenic travel corridors. No new buildings, additions to buildings or parking lots are proposed. Therefore, these guidelines do not apply.

39. GMA Scenic Travel Corridor Guideline 4 (MP, I-1-33) discusses vegetation management projects to improve views experienced from scenic travel corridors. No vegetation management projects are proposed, therefore, guideline 4 is not applicable.

40. GMA Scenic Travel Corridor Guideline 5 (MP, I-1-33) states: "*When evaluating possible locations for undergrounding signal wires or powerlines…utility companies shall prioritize those areas specifically recommended as extreme or high priorities for undergrounding in the Columbia River Gorge National Scenic Area Corridor Visual Inventory" (April, 1990).*

The 1990 CRGNSA Corridor Visual Inventory is a tool for the Management of the Scenic Area. It was created to identify all possible opportunities for coordinated improvements to scenic quality and enhance

the recreational travel experience along three travel corridors. The inventory provides both general and site specific recommendations for scenic resource mitigation and enhancement along the Historic Columbia River Highway, Interstate 84 and State Route 14.

Among other recommendations described for State Route 14, undergrounding power lines from milepost 96.5 to the Scenic Area Boundary was recommended as a high priority. No recommendations related to the transmission lines are described for Interstate 84. As previously discussed, BPA investigated the possibility of undergrounding power lines in the Scenic Area. It was determined that the high-level of ground disturbance necessary for burying these lines would have a high probability of harming sensitive natural and cultural resources, would negatively impact the agricultural capability of the land, would be more difficult to maintain and is not cost effective. Given this information, undergrounding any portion of the proposed transmission line is not feasible and the recommended resource enhancement described in the inventory cannot be implemented. As proposed, the replacement towers and associated access roads have been sited and designed to be visually subordinate to the maximum extent practicable, consistent with Policy 4 (Finding E6) and thus the provisions of the Management Plan for the protection of scenic resources.

SCENIC RESOURCE CUMULATIVE EFFECTS:

41. GMA Key Viewing Areas Guideline 3 (MP, I-1-7) states that a determination of potential visual effects and compliance with visual subordinance policies shall include consideration of the cumulative effects of proposed developments.

    BPA completed a cumulative effects analysis for all three alternatives and are described in Chapter 4 of the FEIS.

    The spatial boundary for a Cumulative Effects Study Area (CESA) in Oregon includes all lands within the GMA east of The Dalles urban area boundary. In Washington the spatial boundary for the CEASA includes all lands within the GMA east of the Columbia Hills Natural Area Preserve. The spatial boundary also excludes all urban areas (Wishram) and BIA lands because they are not subject to review under the NSA Act. The CESA also excludes all land outside of the NSA. This spatial boundary was selected because it includes most of the key viewsheds for Highway 14, Highway 84, and the Columbia River. The temporal boundary of ten years was selected because it's a maximum length of time for any government agency or private organization to reasonably project and plan future projects.

    The cumulative effects analysis does not include an analysis of past actions. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. Focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. The current conditions serve as an aggregate of all past actions, so by looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

Table 4 – Cumulative Effects Scenic Resources

Present and Reasonable Foreseeable Future Actions	Potential effects	Overlap		Extent Cumulative Impacts
		Time	Space	
Existing and ongoing grazing activities	A well managed grazing program should rotate livestock across a landscape and should not have effects to visual resources. Over grazing activities may cause the removal of vegetation and the creation of large disturbed areas that visually contrast with the surrounding vegetation.	Yes	Yes	No effects from grazing activities to visual resources are currently present within the analysis area. Grazing activities can continue to occur concurrently with the operation and maintenance of the transmission lines. There are no incremental impacts.
Existing and ongoing farming activities	Farming activities that affect scenic resources should meet MP requirements.	Yes	Yes	Farming activities are an identified component of this landscape and are considered a scenic resource in the pastoral setting. BPA's project is affecting one landowner's orchard and has a very minor, but incremental impact to scenic resources.
Transmission facilities and operation	Existing transmission facilities are large linear features that can affect scenic resources in the foreground and middleground depending on their location and visibility. Most of this infrastructure was present before the establishment of the NSA and are an allowed deviation to scenic resources requirements. With the exception of the proposed development, no new projects are identified. Replacement of any transmission facility may have an effect to scenic resources. Operation and maintenance of access roads should not create effects to scenic resources.	Yes	Yes	Transmission facilities are present throughout the eastern gorge and have affected scenic resources depending on degree of visibility and viewing distance. The Big Eddy Knight transmission line project would replace smaller towers with larger towers which is an incremental increase in impacts to scenic resources. The greatest cumulative impacts is near the Columbia River crossing from towers 7/5 and 8/1. Incremental impacts to scenic resources from the other towers will depend on degree of visibility and viewing distance from within the three identified KVA's.
Road and railway construction, operation, and maintenance	Existing roads and railways are large linear features that can affect scenic resources in the foreground and middleground depending on their location and visibility. Most of this infrastructure was present before the establishment of the NSA and is an allowed deviation to scenic resources. No new projects are identified.	Yes	Yes	Replacement of any facility should have a neutral effect. Operation and maintenance of roads should not create permanent effects to scenic resources. New road and railway projects that create new infrastructure may have the greatest possibility of affecting scenic resources but none have been identified. Impacts to scenic resource are neutral.
Wild Land Fire	Wildfire is common within the CESA. Typical effects to scenic resources are short-term in duration and result in roads that are more easily viewed in the foreground and middleground viewing zones. Over a long-term time frame natural rehabilitation will mitigate most effects to scenic resources.	Yes	Yes	A large fire occurred north of Wishram in the CESA in the spring 2011. The removal of vegetation as made access roads more visible but has only a negligible effect to the towers. Natural rehabilitation is already occurring and grasses should be growing within the burned area of the CESA by 2012. The effects to scenic resources from the construction of the BEK project would include the creation of new roads (earthtones of existing rock) that may have a greater effect to scenic resources because of the visual contrast with the burned slopes (black). These are short-term, and have a temporary incremental impact to scenic resources.
Residential Development (and Agricultural Buildings and structures	Building permits for single family homes and agricultural buildings and structures can occur at anytime on designated landuses within the CESA. Construction of single family homes would have to meet all NSA requirements and should be visually	May be	Yes	The construction of new single family homes and the BEK project should have no incremental impacts to scenic resources.

	subordinate and not have any major effects to scenic resources.			

F. Cultural Resources – General Management Area

The Management Plan contains provisions for the protection and enhancement of cultural resources in the NSA including objectives, policies, and guidelines (MP, I-2-3 through 21). Applicable provisions are discussed below.

Cultural Resources GMA Policies

1. GMA Cultural Resource Policy 3 (MP, I-2-4) states that a four-step process shall be used to protect cultural resources that includes reconnaissance or historic surveys; an assessment of the effects of proposed uses on significant cultural resources; and the preparation of mitigation plans to avoid or minimize impacts to significant cultural resources.

   Initial cultural resource surveys were conducted by Central Washington University. Staff from the Yakama Nation and Warms Springs participated in the surveys as appropriate. Each of the four tribes also conducted a study to identify significant tribal sites. Additional inventory work focused on the transmission line and consisted of shovel testing high probability areas within the NSA consistent with the management plan and reports submitted to all applicable agencies. A separate task focused on determining the eligibility of some of the sites for the National Register of Historic Places. To date, nearly all of the right of way within the NSA has been inventoried; the areas where surveys could not be completed are addressed in a programmatic agreement (PA). The PA addresses resolving eligibility and effects for archaeological sites and sites of religious and cultural significance to Indian tribes where eligibility and effects cannot be resolved prior to implementing the project. The BPA, USFS, State Historic Preservation Officer (SHPO), and tribes all had input on drafting the PA and the signatories include BPA, USFS, Washington and Oregon SHPOs, and the Advisory Council on Historic Preservation.

2. GMA Cultural Resource Policy 5 (MP, I-2-4) states that cultural resource surveys, evaluations, assessments, and mitigations plans shall be conducted in consultation with Indian tribal governments and other interested persons who submit comments on the proposed project.

   Four Columbia River treaty tribes (Confederated Tribes and Bands of the Yakama Nation [Yakama Nation], Confederated Tribes of the Warm Springs Reservation Of Oregon [Warm Springs], Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe); the Oregon and Washington State Historic Preservation Offices (SHPOs); and the US Forest Service were consulted by BPA for input regarding cultural resource inventories and methodology.

3. GMA Cultural Resource guidelines for the Conclusion of Cultural Resource Protection Process (MP, I-2-12) for the local government to make a final decision on whether the proposed use would be consistent with the cultural resource goals, policies, and guidelines.

   A Forest Service archeologist reviewed the PA and two reports prepared for the project:

   > Programmatic Agreement among the Bonneville Power Administration; United States Forest Service; Bureau Of Indian Affairs, Washington State Historic Preservation Officer; Oregon State Historic Preservation Officer; and the Advisory Council On Historic

Preservation Regarding the Big Eddy-Knight Transmission Project in Oregon and Washington [signed September 2011].

Vaughn, Kevin, Shane Scott, Gideon Cauffman
2011 Cultural Resource Inventory and Archaeological Testing of the Big Eddy-Knight Transmission Line Project in Wasco County, Oregon.

Scott, Shane, Kevin Vaughn, Gideon Cauffman
2011 Cultural Resource Inventory and Archaeological Testing of the Big Eddy-Knight Transmission Line Project in Klickitat County, Washington.

Those portions of the survey reports that address lands under the jurisdiction of the National Scenic Area Act were reviewed by a Forest Service archeologist. Other portions of the surveys that occur within designated "urban" areas or occur outside the NSA boundary and are not subject to the Management Plan were not included in the review. Exploratory subsurface testing was conducted, as required by the management plan. The PA was signed on September 14, 2011 by Acting Area Manager Daina Bambe, as it applies to cultural resources within the National Scenic Area. The PA addresses the remainder of the cultural resource process that will occur during the implementation of this project. It also provides the context for the evaluations of significance, the findings of effect (foreseeable and cumulative) and serves as the mitigation plan to resolve the adverse effects as required under the Management Plan. The taken in combination, the PA and the two cultural resource inventory reports comply with Section 106 of the National Historic Preservation Act and with the Management Plan for the Columbia River Gorge National Scenic Area.

4. GMA Cultural Resource guidelines require a determination of potential effects to significant cultural resources (MP, I-2-8) should include consideration of cumulative effects of proposed developments that are subject to any of the following: 1) reconnaissance or historic survey; 2) a determination of significance; 3) an assessment of effect; or 4) a mitigation plan (MP, I-2-8).

BPA completed a cumulative effects analysis for all three alternatives and are described in Chapter 4 of the FEIS.

The cumulative effects analysis does not include an analysis of past actions. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. Focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

The National Scenic Area Act does not allow actions that cause adverse effects. The PA identified sensitive cultural resource and mitigations that cannot be disclosed. A Forest Service archeologist has concurred with the assessment and any adverse effects will be resolved through actions outlined in the implementation of the Programmatic Agreement. Therefore, there will be no unresolved adverse effects on significant cultural resources within the Columbia River Gorge National Scenic Area.

G. Natural Resources – General Management Area

The natural resource objectives, policies, and guidelines in the GMA are divided into five sections: wetlands; streams, ponds, lakes, and riparian areas; wildlife habitat; rare plants and natural areas. Applicable provisions are discussed below.

Wetlands

Wetlands are an important natural resource and the goals of the Management Plan are to achieve no overall net loss of wetlands acreage and functions. A secondary goal is to increase the quantity and quality of wetlands. A total of three wetlands or their designated buffer zones are crossed by either a new or existing road for the proposed project.

One wetland (WL-ME3, Map Sheet 07) is a stock pond and is classified as a palustrine emergent. An existing transmission tower (17/1) is located at the edge of this wetland buffer zone and is scheduled for removal. The wetland buffer has little habitat or ecological value and is an area of disturbed grassland.

The second wetland (WL-ME11, Map Sheet 09) is a palustrine emergent wetland within a well incised drainage. The wetland is of low quality and has been completely invaded with blackberries. Existing access road 9a is located within the buffer zone and a second existing access road 9b crosses the wetland and drainage. A culvert is in place and functions to allow water to travel beneath the road. These roads are only used by the landowner and BPA.

The third wetland (WL-ME13, Map Sheet 09) is extremely small and located within a ravine. The buffer doesn't provide any ecological value for this small wetland. The existing road is located at the edge of the buffer zone and is only used by the landowner and BPA.

Each wetland, size, and type of impact is described in the table below and applicable provisions, impacts and mitigation are discussed in the findings.

Table 5 – Wetlands

Facility	Wetland ID	Classification	Size (acres)	Type and Size of Impact	Functional Level	Notes
Route-of-travel 07b and tower 17/1	WL-ME3	palustrine emergent	0.5	<100 feet temporary road in buffer	Moderate	Existing Access Road not subject to MP review.
Road 09a	WL-ME11	palustrine emergent	4.8	~1000 feet road in buffer	Low	Road access not subject to MP review.
Road 09b	WL-ME11	palustrine emergent	4.8	~800 feet road in buffer with one drain dip and one gate	Low	If culvert is replaced ~ 0.25 acres impact to wetland. Road access not subject to MP review. Replacement

						of culvert allowed outright.
Road 09d	WL-ME13	palustrine emergent	0.1	~400 feet road in buffer with one culvert	Low	
Modified from FEIS – Page 3-100						

GMA WETLAND GUIDELINES

1. GMA Wetland Review Uses 1 identifies that the modification, expansion, replacement or reconstruction of serviceable structures can occur as long as the existing structure does not increase more than 100%, does not result in result in a loss of wetlands acreage or functions, and intrude further into a wetland or wetlands buffer zone.

   Route of Travel 07a, and Roads 9a, 9b, and 9d were inspected on October 12, 2011. Only the west portion of Road 09d is considered new construction and subject to review under the management plan. None of these facilities will result in an increase of size greater than 100%; a loss of wetland acreage, or intrude further into the wetlands or wetland buffer zones.

2. GMA Wetland Review Uses 2 allows for other review used in wetlands and buffer zones as long as they are compliant with guidelines for the protection of scenic, natural, cultural, and recreation resources. The Management Plan identifies that the modification, expansion, replacement or reconstruction of serviceable structures can occur as long as the existing structure does not increase more than 100%, does not result in result in a loss of wetlands acreage or functions, and intrude further into a wetland or wetlands buffer zone. The removal of tower 17/1 meets this review use criteria.

3. GMA Wetland Site Plans for Review Uses 1 requires a site plan map at a scale of 100 feet and a description of the proposed actions within the wetland or wetland buffer. The application included a site plan map at a scale of 1:400. The site maps are found complete based on the field survey of October 12, 2011, description of the activities in the application, and the limited scope of disturbance of the road maintenance and repair activities.

4. GMA Wetland Guidelines requires the completion of a Practicable Alternative Test for all proposed uses within the wetland or wetland buffer zone (MP, I-3-9). Approval Criteria for Modifications to Serviceable Structures and Minor Water-Dependent and Water-Related Structures in Wetlands 1 requires the completion of a practicable alternative test, use of all reasonable measures to ensure the minimum alteration to the wetland, the use of BMP's, and the rehabilitation of all disturbed area (MP, 1-3-6).

   Tower 17/1
   The removal of existing tower (17/1) from the buffer zone of wetland WL-ME3 can only be completed through the use of route of travel 07b to physically remove the tower. There is no other practicable alternative for access to the tower. The proposed activities of excavating the base of each tower leg to 2 feet in depth, cutting each tower leg at this depth will not result in any alteration of the wetlands or its functions. While the wetland buffer is of little ecological benefit, the removal of the tower has a beneficial effect by removing a structure that may affect the wetland's use by birds and other species.

   Conditions for the approval of the removal of all towers shall include that all excavated will be back-filled with clean soil and all ground disturbance associated with the removal of the towers is reseeded with a native seed mixture approved by the Forest Service.

Access Road 09a and 09b
BPA can maintain and repair these roads without review under the Savings Provisions (See Section C). However they are generally described here to provide contextual information for a comprehensive overview of the development that will take place within the Scenic Area.

Relocating existing Access Road 09a outside of the buffer zone is not practicable because of the difficulty in traversing down a basalt cliff at any other location besides the drainage. Placing a road at any other location in the area would require new impacts with substantial cut and fill. Relocating existing Access Road 09b from crossing the wetland would like result in crossing the wetland at another location and creating even greater impacts than using the existing road bed.

During the field inspection of October 12, 2011 BPA indicated that they would not install a new culvert along access road 09b in wetland WL-ME11 and leave the existing culvert in place. The construction of the drain dip, replacement of the gate, and maintenance of road 09b will not result in any alteration of the wetlands or its functions. No cut and fill slopes will be created on road 09b. Implementation of the maintenance and repair as identified in the Typical Road Cross-section Detail shall meet all requirements for best management practices.

If the decision is made to replace the culvert on Access Road 09b, the replacement of culverts is a use allowed outright provided "*the entity or person owning or operating the culvert shall obtain all necessary federal and state permits that protect water quality and fish and wildlife habitat before construction*" (MP, II-7-13).

Access Road 09d
During the field inspection of October 12, 2011 the Forest Service and BPA walked the area west and north of the wetland to indentify another possible route for Access Road 09d to avoid the wetland buffer. Based on the field inspection of October 12, 2011 there is no practicable alternative for this wetland buffer entry. All possible re-routes for the access road would have required more ground disturbance to go around the wetland buffer that what is currently required to go through the buffer zone along the existing route. Conditions for the repair and maintenance of Access Roads 09d will include reseeding all disturbed areas with a native seed mixture approved by the Forest Service and placement of a silt fence at the top of the wetland to prevent sedimentation.

5. GMA Wetland Guidelines have standards for the delineation of buffer zones (MP, 1-3-8); wetland boundaries (MP, 1-3-9); and wetland conservation plans (MP, 1-3-10). All wetland buffer zones meet management plan guidelines for herbaceous communities. The applicant used the US Fish and Wildlife wetland classification system for wetland delineations (FEIS, page 3-90). This was reviewed by a Forest Service Ecologist and determined to meet the requirements of the Management Plan and the application is considered complete.

6. GMA Wetland Guidelines have requirements for a public interest test (MP, 1-3-10) for when determining whether a proposed use is in the public interest. The removal of tower 17/1 is determined to be a use requiring a public interest test (see findings #G4). The removal of tower 17/1 located in the buffer zone of palustrine emergent wetland WL-ME3 meets the public interest test for the protection of this wetland and buffer zone. While the wetland buffer has low ecological value, the removal of the tower will facilitate the use of the wetland by birds and has a positive ecological benefit to wildlife.

STREAMS, PONDS, LAKES, AND RIPARIAN AREAS

STREAMS, PONDS, LAKES, AND RIPARIAN AREAS GMA GUIDELINES

The goals of the management plan are to protect water quality, natural drainages and fish and wildlife habitat of streams, ponds, lakes, and riparian areas. A second goal is enhance aquatic and riparian areas.

The proposed project crosses two identified fish bearing stream/rivers: Fifteenmile Creek near line mile 0.5 (Map Sheet 01) and the Columbia River between line miles 7 and 8 (Map Sheets 07 and 08). The Big Eddy Knight Transmission line will span these streams and buffer zones but the ground surface will not be impacted by tower footings or access roads.

Existing roads will be repaired or maintained across seasonal non-fish bearing drainages as shown on Map Sheets 10 – 13. BPA can maintain and repair these roads under the Savings Provisions (See Section C), including maintenance and construction of drain dips (also known as water bars), and no further review is required. As described previously the construction and placement of new culverts and rockfords are subject to review under the Management Plan. Existing culverts can be replaced without review under the Management Plan

These drainages can be classified as either ephemeral or intermittent streams depending on whether the streams flow directly in response to precipitation (ephemeral) or portions flow only continuously at certain times of the year from a ground water resource or from a surface source such as melting snow (intermittent). Each of these drainages is composed of bare rock and have no riparian habitat. Since there is no clear distinction between the ephemeral and intermittent streams within this area, the size of each individual watershed was determined for each drainage and the two largest were classified as intermittent streams with buffer zones.

Table 6 - Access Roads Culvert, Drain Dips, and Fords Buffer entries

Map Sheet	Access Road	Culvert	Drain Dip	Ford	Road	Buffer Zone
10	10a	1	-	-	Repair	No
11	11/12/13	1	1	-	Maintenance	No
12	11/12/13	4	-	-	Maintenance	Yes, 1 culvert in buffer between towers 12/3 and 12/4
13	11/12/13	-	-	1	Maintenance	No
13	13a	-	-	1	Repair	Yes, ford in buffer between towers 13/3 and 13/4

7. GMA Streams Review Uses 1 provides for "*the modification, expansion, replacement, or reconstruction of serviceable structures, provided that such actions would not (1) increase the size of an existing structure by more than 100 percent, (2) result in a loss of water quality, natural drainage, and fish and wildlife habitat, or (3) intrude further into a stream, pond, lake, or buffer zone. New structures shall be considered intruding further into a stream, pond, lake, or buffer zone if any portion of the structure is located closer to the stream, pond, lake, or buffer zone than the existing structure*". (MP, I-3-11).

   The primary access road (11/12/13) crosses two intermittent drainages between towers 12/3 and 12/4 and towers 13/3 and 13/4. These drainages have a 50 foot buffer and a culvert and ford are proposed for these locations. The findings for these two buffers zones are that neither of these structures will increase

the size of the road by 100%, impact water quality or fish and wildlife habitat, or intrude further into a buffer zone.

8. GMA Stream Site Plans for Review Uses in Aquatic and Riparian Areas requires a site plan map at a scale of 100 feet and a description of the proposed actions within the wetland or wetland buffer. The application included a site plan map at a scale of 1:400. The site maps are found complete based on the field survey of October 12, 2011, description of the activities in the application, and the limited scope of disturbance of the road maintenance and repair activities.

9. As part of the Approval Criteria for Modifications to Serviceable Structures and Minor Water-Dependent and Water-Related Structures in Aquatic and Riparian Areas GMA Stream Guidelines requires the completion of a practicable alternative test, use of all reasonable measures to minimize the alteration of the drainage, the use of BMP's, and the rehabilitation of all disturbed area (MP, 1-3-14).

   BPA can maintain and repair each of the roads identified in Table 6 these roads under the Savings Provisions (See Section C) and no further review is required. The applicant did submit a practicable alternative test for each drainage and riparian buffer entry. All of the existing roads were placed to follow the contours of the topography. None of the new roads occur within drainages or riparian buffers. The roads and drainages run perpendicular to one another, so there is no practicable alternative to crossing the drainages without miles of detour, and new surface resource disturbance to avoid them.

   Implementation of the maintenance and repair as identified in the Typical Road Cross-section Detail shall meet all requirements for best management practices. Implementation of the Culvert Installation Typical Details and Rock Ford details shall meet all requirements of best management practices. Existing roads will be repaired or maintained across seasonal non-fish bearing drainages. All new culverts and rock fords crossing drainages shall require the following conditions.

   - All culverts shall be sized to accommodate a 100 year flood event and constructed according to the submitted Culvert Installation Typical Details.
   - If the applicant determines that a Rock Ford is more appropriate installation than a culvert, the Forest Service must approve the use of the other structure.
   - All Rock Fords shall be designed and constructed using rock of sufficient size so that channel incision will not occur through the structure under flow conditions up to the 50 year recurrence interval flood. Rock Fords shall be constructed according to all other specifications in the submitted Rock Ford Detail.
   - The replacement of existing culverts are a use allowed outright provided "*the entity or person owning or operating the culvert shall obtain all necessary federal and state permits that protect water quality and fish and wildlife habitat before construction*" and are an allowed use not subject to review in the Management Plan (MP, II-7-13).

10. GMA Stream Guidelines have standards for the delineation of buffer zones (MP, I-3-16) and rehabilitation and enhancement plans (MP, I-3-17). All stream buffer zones meet management plan guidelines for intermittent streams. The construction of the culverts, rock fords, and road maintenance activities proposed within the drainages will not impact any stream or buffer zone because there is no riparian habitat. A rehabilitation and enhancement plan is not required.

WILDLIFE HABITAT

The primary goal within the GMA for wildlife habitat is to ensure that new uses do not adversely affect sensitive wildlife areas and sites as defined in Table 2 (MP, I-3-46). The secondary goal is to enhance wildlife habitat that has been altered or destroyed by past uses.

Wildlife habitat within the project area include wetlands, riparian areas, talus, and cliffs. Sensitive wildlife area or sites that are within 1000 feet of the proposed project include one peregrine falcon eyrie and waterfowl areas. The closest cliff habitat is within ½ mile of the project site on the north bank of the Columbia River. Other sites were documented, but the only other occurrences within the NSA include a golden eagle nest south of the project route on the north bank of the Columbia River. Other sensitive wildlife areas in the NSA include cliffs (WDFW priority habitat), riparian areas, ponds, and wetlands (ODFW strategy habitats). Of the 17 wildlife area identified on this table only three are present within 1000 feet of proposed project: a peregrine falcon habitat and two waterfowl areas (Fifteenmile Creek and the Columbia River). The riparian and aquatic habitats of Fifteenmile Creek and the Columbia River will not be physically disturbed. Of the six wildlife sites identified in this table only Golden Eagle and Peregrine Falcon have been identified within 1000 feet of the proposed project.

The Columbia Hills which spans 65 km along the Columbia River in southern Klickitat County, extending eastward to Rock Creek, and north from the Columbia River approximately 10 km, is a very important area for many bird species in the general area. The Columbia River Gorge is also an identified migratory flyway (FEIS, pg 3-107). Shrub-steppe, including native grassland, is the dominant habitat of the site. Hundreds of raptors of 13 or more species, including Bald Eagle and Peregrine Falcon, have been recorded in winter. There are also prairie falcon and golden eagle aeries, and Swainson's Hawk nests. The Big-Eddy Knight transmission lines go through this area.

WILDLIFE HABITAT GMA GUIDELINES

11. GMA Wildlife Habitat Review Uses 1 identifies that proposed uses may be allowed within 1,000 feet of a sensitive wildlife area or site, subject to compliance with guidelines for the protection of scenic, natural, cultural, and recreation resources and "Approval Criteria for Review Uses Near Sensitive Wildlife Areas and Sites" in this section (MP, I-3-18).

    Of the 17 wildlife areas identified in Table 2 (MP, I-3-46) only three are present within 1000 feet of proposed project: a peregrine falcon habitat and two waterfowl areas. Of the six wildlife sites identified in this table only the Peregrine Falcon have been identified within 1000 feet of the proposed project. The general geographic locations of the waterfowl areas are Fifteenmile Creek (line mile 1); Columbia River (line mile 8); and Columbia Hills (line mile 12).

12. GMA Wildlife Habitat site plan and field surveys requirements near 1,000 feet of sensitive wildlife areas and sites requires the preparation of a 1 inch equals 100 feet site map and a field survey to identify sensitive wildlife area or sites for electric facilities, lines, and equipment, and appurtenances that are 33 kilovolts or greater (MP, I-3-20).

    BPA submitted a site plan at the scale of 1 inch equals 400 feet which is considered complete and field surveys were completed for the FEIS by a professional biologist. As described in BPA's application, field

surveys were conducted by professional wildlife biologists to determine occurrences of wildlife species in August 2009 and April 2010. Either no suitable habitat or no documented occurrences of federally listed wildlife species were found in the project right-of-way within the NSA. The peregrine falcon, a federal species of concern, was found along the Columbia River near the right-of-way. In addition, five species (including peregrine falcon) on the sensitive species list of the Columbia River Gorge National Scenic Area and National Forest System have been documented near the project area, although suitable habitat is present in places for a large number of other species on this list as well (see Appendix D of the Final EIS). The five documented sensitive species include bald eagle, ferruginous hawk, peregrine falcon, golden eagle, and merlin. Sitings have primarily been of raptor nests in the cliff and rock outcrop habitats along the banks of the Columbia River. These include a peregrine falcon nest documented north of the project route on the south bank, four falcon eyries on the south and north banks, an unoccupied and unidentified raptor nest on the north bank, and a golden eagle nest south of the project route near line mile 12 on the north bank. Additional surveys will be conducted in spring 2012 for signs of nesting peregrine falcon and golden eagle in miles 12 and 13. If the species are nesting, construction timing restrictions will be implemented as described in the mitigation measures. Further information is included in the application at page 21 and 22.

13. GMA Wildlife Habitat approval criteria for review uses near sensitive wildlife areas and sites requires review by the Oregon Department of Fish and Wildlife or the Washington Department of Fish and Wildlife (MP, I-3-20). Both agencies reviewed the FEIS and provided comments on the proposed project (FEIS, Volume 3: Comments and Responses, pages 96 and 218).

    The peregrine falcon eyrie near mile 12 is located at a much lower elevation than the nearest transmission towers and effects will be minimal. No cliff habitat will be impacted by tower footings or roads, although new transmission lines spanning the cliffs may present a risk of collisions with raptors. The riparian and aquatic habitats of Fifteenmile Creek will not be physically disturbed. The Columbia River Gorge is an identified migratory flyway. Protected bird species as well as other species of birds using the identified cliff habitat, riparian areas, ponds, wetlands, Fifteenmile Creek, and the open water habitats of the Columbia River could potentially collide with the transmission line spanning these areas.

    On page 27 of BPA application they have agreed to the following mitigations 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, and use the following mitigation schedules where possible:

    - 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).
    - 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).
    - 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).

    BPA has also agreed to install marker balls and bird diverters that will be placed on the ground wires and fiber cables to mitigate this risk and conduct additional surveys in spring 2012 for signs of nesting near the proposed project. If species are present, construction timing restrictions will be implemented as described in the application mitigation measures (See Application - page 27).

    The Forest Service has determined that the following conditions should be applied to the project within the CRGNSA:

- BPA will schedule a meeting with biologists (or designated representatives) from the CRGNSA; WDFWS, and ODFW before beginning nesting surveys for species identified in Findings G13. Results of nesting surveys will be distributed to all three agencies. If nesting surveys identify the presence of an active nest, timing and operational restrictions are mandatory until released by the respective state agency.
- BPA has included mitigations for the use of bird diverters on overhead ground wires in high risk areas (over river and stream crossing and near wetlands). The Forest Service also encourages BPA to consider the placement of bird diverters on the remaining portions of the Big Eddy Knight transmission line located within the National Scenic Area.
- The Forest Service encourages the use of bird diverters neutral in color.

14. GMA Wildlife Habitat guidelines require the preparation of wildlife management plans when a proposed use is like to adversely affect a sensitive wildlife area or site (MP, I-3-22). The only peregrine falcon eyrie within 1000 feet of the proposed project is located at a much lower elevation than the nearest transmission towers and effects will be minimal (mile 12 in Washington State). There are no likely adverse affects to sensitive wildlife areas or sites and the development of a wildlife management plan is not required. These findings were confirmed and approved by with a WDFW biologist.

15. GMA Wildlife Habitat guidelines require the approval for fences in Deer and Elk Winter range (MP, I-3-24). The proposed project does not include any fences within areas identified as deer or elk winter range.

RARE PLANTS

The goals within the GMA for Rare Plants are to ensure that new uses do not adversely affect plant species that are (1) endemic to the Columbia River Gorge; lists as endangered or threatened pursuant to federal or state endangered species acts, or listed as endangered, threatened, or sensitive by the Oregon or Washington Natural Heritage Program.

RARE PLANT GMA GUIDELINES

16. GMA Rare Plants Review Uses 1 identifies that proposed uses may be allowed within 1,000 feet of a sensitive plant, subject to compliance with guidelines for the protection of scenic, natural, cultural, and recreation resources and "Approval Criteria for Review Uses Near Sensitive Plants" in this section (MP, I-3-26). ICF Johns & Stokes performed the vegetation and wildlife surveys and they surveyed a 1000 foot corridor in level terrain and a 2000 foot swath on steep terrain and no sensitive plants were identified (See finding G-62).

17. GMA Rare Plants site plan and field surveys requirements near 1000 feet of sensitive wildlife areas and sites requires the preparation of a 1 inch equals 100 feet site map and a field survey to identify sensitive wildlife area or sites for electric facilities, lines, and equipment, and appurtenances that are 33 kilovolts or greater (MP, I-3-20).

    BPA submitted a site plan at the scale of 1 inch equals 400 feet which is considered complete and the applicant conducted field surveys by a professional botanist to determine occurrences of rare plant species in August 2009, April 2010, and August 2010. The Washington Natural Heritage Program database identifies the presence of Smooth desert-parsley along the project right-of-way near Wishram within the NSA. Field surveys were completed within the right-of-way and no Smooth desert-parsely, or other federally listed plants and no plant species on sensitive species list for the NSA and National Forest

System have been found within 1,000 feet of the project right-of-way within the NSA, although suitable habitat is present in places for a large number of other species on this list (see Appendix D of the Final EIS). Also, no high quality or state priority vegetation communities were identified along the project route.

18. GMA Rare Plants approval criteria for review uses near sensitive plants require that the proposed used be reviewed by the Oregon or Washington Natural Heritage Program. Since no rare plants were identified during the surveys, this requirement (MP, I-3-27), sensitive plant buffer zones (MP, I-3-28), or protection and rehabilitation plans (MP, I-3-27) are not required.

NATURAL RESOURCES CUMULATIVE EFFECTS CONSIDERATION

19. GMA Natural Resources Provisions require a determination of potential natural resources effects that includes consideration of cumulative effects of proposed developments within the following areas: 1) wetlands and their buffer zones; 2) streams, ponds, lakes, riparian areas and their buffer zones; 3) sites within 1000 feet of sensitive wildlife areas and sites; and 4) sites within 1000 feet of rare plants.

    BPA completed a cumulative effects analysis for all three alternatives and are described in Chapter 4 of the FEIS.

    The cumulative effects analysis does not include an analysis of past actions. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. Focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. The current conditions serve as an aggregate of all past actions, so by looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

    In Oregon the spatial boundary for the analysis area includes all lands within the GMA east of The Dalles urban area boundary. In Washington the spatial boundary for the analysis area includes all lands within the GMA east of the Columbia Hills Natural Area Preserve. The spatial boundary also excludes all urban areas (Wishram) and Bureau of Indian Affairs lands since they are not subject to review under the NSA Act. This spatial boundary was selected because it was large enough to include a broad range of different actions, includes almost exclusively the Grassland Landscape Setting; and the primary land use designation is Large-Scale Agriculture. The temporal boundary of ten years was selected because it is a reasonable length of time for our agency to reasonably plan future projects.

    The following table provides an overview of present and foreseeable actions, resources affected and a general description of anticipated cumulative effects.

Table 7: Potential Natural Resource Cumulative Effects

Affected Resource[1]	Present and Reasonable Foreseeable Future Actions	Overlap		Extent Cumulative Impacts
		Time	Space	
WT = wetlands and their buffer zones; R= streams, ponds, lakes, riparian areas and their buffer zones;	Agricultural and livestock runoff, road construction and maintenance, operation and maintenance of transmission lines.	Yes	Yes	Grazing has and will continue to have some effects to wetlands, riparian zones, sensitive wildlife areas; and rare plants on private lands within the GMA. Farming activities are generally not compatible with wetland and riparian areas because of associated runoff that includes pesticides as well as sedimentation. Storm water runoff from existing roads and railways would continue to affect wetlands and riparian resources but new projects should be mitigated through the use of BMP's, SWPP's, and MP guidelines. The existing project has BMPs, SWPP, and additional mitigations based on MP guidelines. The repair and maintenance of the existing access roads as part of the proposed project should mitigate impacts to WT and R resources and any incremental impacts should be neutral to very minor.
WI= sites within 1000 feet of sensitive wildlife areas and sites- Migratory Birds are the primary affected resource meeting these criteria.	Agricultural and livestock operations, road construction and maintenance, operation and maintenance of transmission lines; hunting; conservation projects.	Yes	Yes	Each of these actions may disturb wildlife habitat but only have a direct effect on migratory birds if they occur near occupied nesting sites. Transmission facilities have been identified as having effects to avian species and the effects from operating the existing transmission facilities would continue. The operation of existing transmission facilities with the proposed project would contribute to incremental impacts to Migratory Birds. Using bird diverters as mitigation should decrease the cumulative impacts to bird species.
RP= sites within 1000 feet of rare plants. No rare plants were identified within the project boundary.	Agricultural and livestock operations, road construction and maintenance.	Yes	Yes	Present and future agricultural and livestock operations will continue to have major effects to Rare Plants. Most of the native plant community has been permanently removed. Road construction and maintenance may contribute to the spread of invasive plant species that compete with the remaining native plants. Since no Rare Plants were identified within the right-of-way of the transmission lines, the proposed project, combined with existing and future activities described above, should have no cumulative impact to Rare Plants.
WT = wetlands and their buffer zones; R= streams, ponds, lakes, riparian areas and their buffer zones; WI= sites within 1000 feet of sensitive wildlife areas and sites; and RP= sites within 1000 feet of rare plants.				

H. Recreation Resources – General Management Area

GMA Recreation objectives, policies and guidelines ensure the protection and enhancement of existing recreation resources consistent with Indian treaty rights. Applicable provisions are discussed below.

1. GMA Recreation Resources review use guidelines 8 requires that new buildings or structures may detract from the use and enjoyment of established recreation sites on adjacent parcels, an appropriate buffer shall be established between the building/structure and the parcel. Interstate 84 and State Route 14 are Scenic Travel Corridors - linear features promoted for their use as recreational travel routes (MP, I-4-5). The Columbia River is used by recreational boaters and wind sport enthusiasts. The nearest recreation site and river access area is Celilo Park, an Army Corps of Engineers recreation site in Oregon. This site is approximately one mile away from the transmission towers of the Columbia River crossing. This recreation site primary use is as a historic site that provides access to the river with bathrooms, picnic areas, and camping.

   The proposed project replaces existing transmission towers. The effects to scenic resources from these sites are summarized in findings G12. The proposed project does not affect the recreation use of the roads, park or access to Columbia River. The proposed project does not require any mitigation to minimize potential affects to recreation resources other than the scenic resource protection requirements discussed in Section E above.

I. Conclusion

As proposed, Big Eddy Knight Transmission Line project is consistent with the National Scenic Area Management Plan Policy and Guidelines provided they meet the criteria and conditions listed in the Findings of Fact and Consistency Determination.