2.0 ALTERNATIVES

This chapter includes information on how alternatives were developed, describes the alternatives that are evaluated in the EIS, details system components common to all Action Alternatives, compares the key features and effects of the alternatives studied, describes conformance with BLM and Forest Service land use plans, and identifies the preferred alternative.

Appendix A (Gateway West Transmission Line Project Maps) contains the figures referenced herein. Appendix B (the Proponents' POD[1]) details the components common to all Action Alternatives, including construction and operations.

2.1 OVERALL PROJECT

The Project begins in Wyoming at the Windstar Substation and Dave Johnston Power Plant. Segment 1W(a) for the most part follows or parallels the West-wide Energy (WWE) corridor and an existing 230-kV line. This 230-kV line is proposed for reconstruction as a portion of Segment 1W(a) and Segment 1W(c). Both lines will terminate at the proposed Aeolus Substation. The Project then proceeds as one single-circuit 500-kV line from Aeolus to the Populus Substation though Segments 2, 3, and 4. The interconnection from Anticline to its neighboring existing substation at the Jim Bridger Power Plant, Segment 3A, is 5.1 miles of 345-kV single-circuit line. At Populus, the Project splits into two single-circuit 500-kV lines along roughly parallel paths. Segments 5, 6, and 8 follow a more northerly route toward the Hemingway Substation through the Borah and Midpoint Substations, while Segments 7 and 9 follow a more southerly route through the Cedar Hill Substation to the Hemingway Substation. Segment 10 provides an interconnection between the Cedar Hill and Midpoint Substations and also provides an interconnection between the more northerly and more southerly routes. The Proponents have proposed this split because of the need to serve customers along each route and also to increase reliability.

The proposed transmission line segments would cross federal, state, and private lands. Table 2.1-1 summarizes miles crossed by ownership for the Proposed Route. The total length of all segments requiring new transmission line construction is approximately 990 miles. The ROW width requested for the transmission line is 125 feet for single-circuit 230-kV segments, 150 feet for the 345-kV segment, and 250 feet for single-circuit 500-kV segments.

Facilities included as part of the Project include the following:

- Ten transmission line segments, including their associated access roads, multipurpose and helicopter fly yards, and other temporary construction ground disturbances;

[1] Subsequent references to Appendix B in this document should be understood to be referencing the entire POD, which includes 19 appendices, including one titled Appendix B, Transmission Line and Substation Components. Appendix B to the POD is only a part of Appendix B to the Final EIS.

Table 2.1-1. Proposed Project Summary of Miles and Percent Crossed by Ownership

Segment	Length (Miles)						Percent of Total				
	BLM	NF[1/]	State	Private	Other[2/]	Total	BLM	NF	State	Private	Other
Segment 1W(a) – Windstar to Aeolus	27.0	2.3	17.5	27.0	0.1	**73.8**	36.6	3.1	23.6	36.5	0.1
Segment 1W(c) – Dave Johnston to Aeolus	24.7	2.3	16.1	30.4	0.1	**73.6**	33.6	3.2	21.8	41.3	0.1
Segment 2 – Aeolus to Creston	37.6	–	4.7	49.5	0.1	**91.9**	41.0	–	5.1	53.9	0.1
Segment 3 – Creston to Anticline	22.5	–	1.0	22.5	–	**45.9**	48.9	–	2.2	48.9	–
Segment 3A— Anticline to Jim Bridger 345-kV	3.2	–	–	1.9	–	**5.1**	63.0	–	–	37.0	–
Segment 4 – Anticline to Populus	72.0	9.1	12.5	100.7	3.3	**197.6**	36.4	4.6	6.3	50.9	1.7
Segment 5 – Populus to Borah	13.2	–	3.6	38.9	0.1	**55.7**	23.7	–	6.5	69.8	0.1
Segment 6 – Borah to Midpoint[3/]	–	–		0.5	–	**0.5**		–		100.0	–
Segment 7 – Populus to Cedar Hill	28.3	–	4.3	85.6	–	**118.2**	24.0	–	3.6	72.4	–
Segment 8 – Midpoint to Hemingway	87.1	–	9.3	31.5	3.6	**131.5**	66.2	–	7.1	24.0	2.7
Segment 9 – Cedar Hill to Hemingway	129.2	–	4.6	28.4	–	**162.2**	79.7	–	2.8	17.5	–
Segment 10 – Mid-point to Cedar Hill	16.2	–	–	18.0	0.1	**34.4**	47.2	–	–	52.5	0.3
Total Project[4/]	**461.1**	**13.7**	**73.4**	**434.9**	**7.3**	**990.5**	**46.6**	**1.4**	**7.3**	**43.9**	**0.7**

Percentages provided in other chapters of the EIS may vary slightly due to differences in the Analysis Area used for various resources.
1/ Totals reflect mileage crossed on National Forest System (NFS) land.
2/ Other includes Bureau of Reclamation, U.S. Fish and Wildlife Service, etc.
3/ Segment 6 does not include ground-disturbing activity except in association with the expanded Borah and Midpoint Substations.
4/ Totals may not equal 100 percent due to rounding.
BLM – Bureau of Land Management; NF – National Forest

- Three proposed substations and expansion or modifications at nine existing substations;
- Other associated facilities including communication systems and optical fiber regeneration stations; and
- Access roads and distribution supply lines where needed for proposed substations and optical fiber regeneration stations.

Details of construction and operations as submitted by the Proponents as part of their POD are included in Appendix B of this Final EIS. Environmental protection plans are included as appendices to the POD. These plans are considered part of the Project description for the proposed Project. Table 2.1-2 summarizes the proposed facilities. Table 2.1-3 shows the construction schedule for the Project.

Table 2.1-2. Summary of Project Facilities

Project Facility	Description
Transmission Line Segments	
Transmission Line Features Common to All Proposed 500-kV Segments	• Three-phase 500-kilovolt (kV) construction for all tower designs, conductor spacing and clearances.[1/] • Conductors: Bundled 1949.6 kcmil 42/7 aluminum conductor steel reinforced (ACSR)/TWD "Athabaska/TW," with three subconductors per phase. Non-specular (dull) finish rather than a shiny finish. • Estimated subconductor diameter: 1.504 inches. • Bundle spacing: Distance between subconductors is 18 inches and 25 inches. • Non-reflective, non-refractive insulators. • One optical ground wire (OPGW) containing 48 fibers and with diameter of 0.637 inch on one side of tower. • One extra high strength (EHS) steel overhead ground wire. • Steel overhead ground wire diameter: approximately 0.495 inch. • Minimum ground clearance: 35 feet. • Structure types: lattice steel single-circuit structures. Dulled galvanized steel finish. • Structure heights: Single-circuit structure varies between 145 and 180 feet. Average height of 156 feet. • Approximate distance between structures: 1,200 to 1,300 feet. • Right-of-way (ROW) width for one single-circuit: 250 feet. • The exact quantity, distance between, and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.
Transmission Line Features for Segment 3A (345-kV)	• Three-phase 345-kV construction for all structure designs, conductor spacing and clearances.[1/] • Conductors: Bundled 1272 kcmil 45/7 ACSR "Bittern" with three subconductors per phase. Non-specular finish. • Estimated subconductor diameter: 1.345 inches. • Bundle spacing: 18 inches and 25 inches. • Non-reflective, non-refractive insulators. • One OPGW containing 48 wires and with diameter of 0.495 inch where communications are required. • One EHS steel overhead ground wire. • Estimated shield wire diameter: approx. 0.495 inch. • Minimum ground clearance: 30 feet. • Structure types: single-circuit steel H-frame structures, self-weathering steel. • Above-ground structure heights: vary between 80 and 110 feet. • Approximate distance between structures: 800 feet. • ROW width: 150 feet. • The exact quantity, distance between, and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.

Table 2.1-2. Summary of Project Facilities (continued)

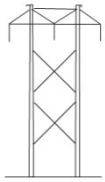
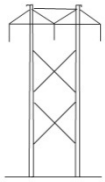
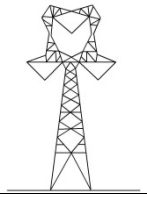
Project Facility	Description
Transmission Line Features Common to All Proposed 230-kV Segments	• Three-phase 230-kV construction for all structure designs, conductor spacing and clearances.[1/] • Non-specular finish applied to conductors. • Bundle spacing: 18 inches vertical with two subconductors per phase. • Non-reflective, non-refractive insulators. • One OPGW containing 48 fibers and with diameter of 0.637 inch where communications is required • Two EHS steel overhead ground wires where communication is not required. One EHS steel overhead ground wire where communication is required. • Estimated shield wire diameter: approx. 0.495 inch. • Minimum ground clearance: 28 feet. • Structure types: single-circuit steel H-frame structures, self-weathering steel. • Above-ground structure heights: vary between 60 and 90 feet. • Approximate distance between structures: 800 feet. • ROW width: 125 feet. • The exact quantity, distance between, and placement of the structures will depend on the final detailed design of the transmission line, which is influenced by the terrain, land use, environmental constraints, and economics. Alignment options may also slightly increase or decrease the quantity, location, and height of structures.
Segment 1W(a) – Windstar to Aeolus 	• Single-circuit 230-kV transmission line in one ROW. • Conductors: Bundled 1272 kcmil 45/7 ACSR “Bittern” with two subconductors per phase. • Approximate number of structures: 531. • Line length: Approximately 73.8 miles. • One optical signal regeneration site. • See Figure A-2 in Appendix A.
Segment 1W(c) – Dave Johnston to Aeolus 	• Existing single-circuit 230-kV transmission line to be reconstructed. • Conductors: Bundled 1272 kcmil 45/7 ACSR “Bittern” with two subconductors per phase between Dave Johnston Substation and Shirley Basin Substation; approximately 58.8 miles. • Conductors: Bundled 1557 kcmil 45/7 ACSS/TW “Potomac” with two subconductors per phase between Shirley Basin Substation and the proposed Aeolus Substation; approximately 13.8 miles. • Approximate number of structures to be replaced: 547. • Line length: Approximately 73.6 miles. • No optical signal regeneration sites. • See Figure A-2 in Appendix A.
Segment 2 – Aeolus to Creston 	• One single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 390. • Line length: Approximately 91.9 miles. • Two optical signal regeneration sites. • See Figure A-3 in Appendix A.

Table 2.1-2. Summary of Project Facilities (continued)

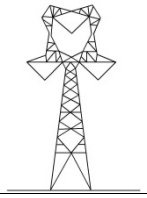
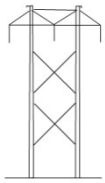
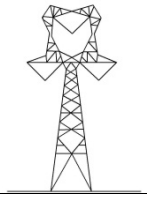
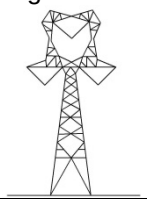
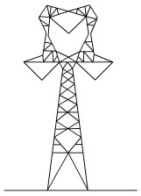
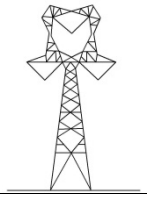
Project Facility	Description
Segment 3 – Creston to Anticline 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 194. • Line length: Approximately 45.9 miles. • No optical signal regeneration sites. • See Figure A-4 in Appendix A.
Segment 3A – Anticline to Bridger 345-kV Yard 	• Single-circuit 345-kV transmission line in one ROW. • Approximate number of structures: 25. • Line length: Approximately 5.1 miles. • No optical signal regeneration sites. • See Figure A-4 in Appendix A.
Segment 4 – Anticline to Populus 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 856. • Line length: Approximately 197.6 miles. • Three optical signal regeneration sites. • See Figures A-5 and A-6 in Appendix A.
Segment 5 – Populus to Borah 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 246. • Line length: Approximately 55.7 miles. • No optical signal regeneration sites. • See Figure A-7 in Appendix A.
Segment 6 – Borah to Midpoint 	• Re-energize existing 345-kV system to 500-kV (this line segment was previously constructed to 500-kV standards). • Transmission line construction only required at segment ends to reroute from the existing 345-kV substation bays to the proposed 500-kV substation bays. • Structure type illustration is only for the new structures required. • Approximate number of structures: 10. • See Figure A-8 in Appendix A.
Segment 7 – Populus to Cedar Hill 	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 523. • Line length: Approximately 118.2 miles. • Two optical signal regeneration sites. • See Figure A-9 in Appendix A.

Table 2.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Segment 8 – Midpoint to Hemingway	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 575. • Line length: Approximately 131.5 miles. • Two optical signal regeneration sites. • See Figure A-10 in Appendix A.
Segment 9 – Cedar Hill to Hemingway	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 708. • Line length: Approximately 162.2 miles. • Two optical signal regeneration sites. • See Figure A-11 in Appendix A.
Segment 10 – Midpoint to Cedar Hill	• Single-circuit 500-kV transmission line in one ROW. • Approximate number of structures: 157. • Line length: Approximately 34.4 miles. • No optical signal regeneration sites. • See Figure A-12 in Appendix A.
Windstar Substation – Segment 1W(a)	• Modification of substation within existing fenceline (located on private lands). • Existing access road is gravel and will not need extension for Gateway West. • 230-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers, 230-kV shunt capacitor banks. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment. • See Figure A-16 in Appendix A.
Dave Johnston Power Plant - Segment 1W(c)	• Modification of existing substation (located on private lands). • Existing access road is adequate. • All construction will be inside the existing fence line. No additional area is required. • 230-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-17 in Appendix A.

Table 2.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Heward Substation – Segment 1W(c)	• Expansion of existing Difficulty Substation (located on BLM-administered lands). • Developed acreage: approximately 5 acres fenced and owned separately from the existing Difficulty Substation. • 230-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment. • Addition of new control building within substation fenced area. • See Figure A-18 in Appendix A.
Shirley Basin Substation – Segment 1W(c)	• Modification of existing substation (located on private lands). • Existing access road is adequate. • All construction would be inside the existing fence line. No additional area is required. • 230-kV line termination structures approximately 70 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-19 in Appendix A.
Aeolus Substation – Segments 1W and 2	• Proposed substation (located on private lands). • Developed acreage: Approximately 100 acres fenced with an improved access road. • Upgrading County Road 121 is needed and this upgrade would result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway, including replacement of an existing bridge. • 500-kV and 230-kV circuit breakers and related switching equipment, bus and support structures, 500/230-kV transformer banks, 500-kV shunt reactor banks, 500-kV and 230-kV shunt capacitor bans, potential and current transformers. • Control, protection, and communications equipment. • 500-kV line termination structures approximately 135 feet in height. • 230-kV line termination structures approximately 70 feet in height. • Addition of new control buildings within the substation fenced area. • New Static Var Compensator occupying 10 to 15 acres within the substation fenced area, housed in a building that contains power electronic equipment and associated cooling equipment. • See Figure A-13 in Appendix A.

Table 2.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
Anticline Substation – Segments 3 and 4	• Proposed substation (located on private lands). • Developed acreage: Approximately 140 acres fenced with an improved access road. • To access the new 500-kV yard, an existing dirt road about a mile long would be improved with construction of an all-weather surface with improved access approaches, main highway entrance, and Union Pacific Railroad (UPRR) crossing arrangements. • 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 345-kV phase shifting transformer, 500-kV shunt reactor banks, 500-kV series capacitor bank, and 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • 345-kV line termination structures approximately 100 feet in height. • Control, protection, and communications equipment. • Addition of new control buildings within the substation fenced area. • See Figure A-14 in Appendix A.
Jim Bridger 345-kV Substation – Segment 3A	• Expansion of existing substation (located on private lands). • Existing access road is adequate. • Expansion of 345-kV yard by 10 acres. • Additions to Jim Bridger 345-kV yard, including 345-kV circuit breakers and related switching equipment, bus and support structures, potential and current transformers. • Development of a new 345-kV transmission line termination structure approximately 100 feet in height to connect with the proposed line to Anticline Substation. • Relocation of an existing 345-kV shunt capacitor bank within the substation fenced area. • Control, protection, and communications equipment added inside the existing control building. • See Figure A-20 in Appendix A.
Populus Substation – Segments 4 and 5	• Expansion of existing substation (located on private lands). • Developed acreage: increase the fenced area by approx. 80 acres. • Existing access road is adequate. 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. • See Figure A-21 in Appendix A.
Borah Substation – Segments 5 and 6	• Expansion of existing substation (located on private lands). • Developed acreage: increase the fenced area by approx. 35 acres. • Existing access road is gravel and will not need extension. • 500-kV and 345-kV circuit breakers and related switching equipment, bus and support structures, 500/345-kV transformer bank, 500-kV shunt reactor banks, 500-kV shunt capacitor banks, potential and current transformers. 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added inside the existing control building.

Table 2.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Substation Facilities	
	• Up to 5 single-circuit 500-kV structure relocations required on existing line from Midpoint Substation. • See Figure A-22 in Appendix A.
Midpoint Substation – Segments 8 and 10	• Expansion of existing substation (located on private lands). • Developed acreage: increase the fenced area by approximately 40 acres. • Existing access roads are paved and will not need extension. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added to existing control building. • See Figure A-23 in Appendix A.
Hemingway Substation – Segments 8 and 9	• Expansion of existing substation (located on private lands). • Expansion of existing station to add a 500-kV line bay for termination of the Hemingway – Midpoint and the Hemingway – Cedar Hill transmission lines. • All construction would be inside the existing fence line. No additional area is required. • Existing access is adequate. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV series capacitor bank, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added to the existing control building. • See Figure A-24 in Appendix A.
Cedar Hill Substation – Segments 7, 9, and 10	• Proposed substation (located on private lands). • Developed acreage: approx. 54 acres fenced with access road. • Adjacent existing road is gravel and will not need extension. • 500-kV circuit breakers and related switching equipment, bus and support structures, 500-kV shunt reactor banks, 500-kV shunt capacitor banks, potential and current transformers. • 500-kV line termination structures approx. 135 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. • Up to 5 single circuit 500-kV structure relocations required on existing line from Borah Substation. • See Figure A-15 in Appendix A.

Table 2.1-2. Summary of Project Facilities (continued)

Project Facility	Description
Ancillary Facilities	
Communications and Control Facilities – Optical Signal Regeneration Sites	• Regeneration sites are required to amplify the system control and monitoring signals carried over the fiber optic cable attached to the transmission structures. • A total of up to 13 regeneration sites would be needed for the Project. Segments requiring regeneration sites are noted in the transmission line section of this summary table. The locations for the regeneration sites are determined after the preferred route is identified and detailed design engineering is completed. • Regeneration sites would be located either within a substation or at another location along the route. • Regeneration sites are located within a 75- X 75-foot fenced area. • Typical building dimensions within the fenced area are 12 feet wide X 32 feet long X 9 feet tall. • The fiber within the OPGW cable supported on the transmission structures is routed in and out of the regeneration site building from the nearest transmission structure either underground or overhead along two independent diverse paths. • Electronic equipment, required to support the fiber optic cable installation, is located inside the building. • At sites not within a substation, a liquid propane fueled emergency generator will be installed to provide backup power during an outage of the local electric distribution system supply. • Maximum regeneration site spacing is 55 miles or less depending on access and proximity to local electric distribution lines. • The primary siting criteria for a regeneration site are: adjacent to the Gateway West transmission line ROW, proximity to existing low-voltage electric distribution lines to provide power to the facility, and the ability to easily access the site by vehicle.
Distribution Supply Lines	• Distribution line extensions are required to provide operational power and station service power at: o Up to 13 regeneration sites (locations to be determined during final design) o Aeolus 500-kV Substation (11 miles across BLM-managed and private lands), needed for construction and possibly for operations. o Anticline 500-kV Substation (3.3 miles across private land) o Cedar Hill Substation (less than 200 feet across private land). o Heward Substation (new distribution line but same configuration as existing Difficulty Substation distribution line). • Typically provided from an existing distribution line located in proximity to the site. • Not required for modifications at Dave Johnston and Shirley Basin or for expansions at Windstar, Jim Bridger, Populus, Borah, Midpoint, and Hemingway Substations because these substations exist.

1/ Project design follows the Avian Power Line Interaction Committee recommendations. Details for tower construction and components such as conductor spacing are provided in Appendix B.

Table 2.1-3. Proposed Action Construction Schedule

Segment Number	Segment or Substation Name	Primarily Wyoming		Idaho	
		Start June 2015	End Dec 2018	Start June 2017	End Dec 2021
	Windstar Substation	Windstar Expansion			
	Dave Johnston 230-kV Substation	Dave Johnston 230-kV Substation			
	Heward Substation	Heward Substation			
	Aeolus Substation	Aeolus Substation			
	Populus Substation	Populus Expansion			
	Anticline and Jim Bridger 345-kV Substations	Anticline Substation and 345-kV bays at existing Jim Bridger Substation			
1W(a)	Windstar – Aeolus #1	Single-circuit 230-kV and rebuild a short section of the existing single-circuit 230-kV line			
1W(c)	Dave Johnston – Heward –Aeolus	Rebuild the existing single circuit 230-kV			
2	Aeolus – Creston	Single-Circuit 500-kV			
3	Creston – Anticline	Single-Circuit 500-kV			
3A	Anticline – Jim Bridger	Single-Circuit 345-kV			
4	Anticline – Populus	Single-Circuit 500-kV			
	Populus Substation			Populus Expansion	
	Cedar Hill Substation			Cedar Hill Substation	
	Hemingway Substation			Hemingway Expansion	
7	Populus – Cedar Hill			Single-Circuit 500-kV	
9	Cedar Hill – Hemingway			Single-Circuit 500-kV	
10	Midpoint – Cedar Hill			Single-Circuit 500-kV	
	Borah Substation				
	Midpoint Substation			Borah Expansion	
	Hemingway Substation			Midpoint Expansion	
5	Populus – Borah			Hemingway Expansion	
6	Borah – Midpoint [1/]			Single-Circuit 500-kV	
8	Midpoint – Hemingway			Existing single-circuit	

1/ Existing single circuit constructed to 500-kV standards (energized from 345 kV to 500 kV).

2.1.1 Structure Lighting

RTO infrared obstruction lights that incorporate both red and infrared light-emitting diodes (LEDs) in a single unit would be installed on every other transmission structure on the east side of the Jarbidge Military Operating Area between MP 46.5 through MP 54.4 of the BLM Preferred Alternative; in the Saylor Creek Air Force Range restricted area on every transmission structure between MP 91.2 and MP 95.7 of the BLM Preferred Alternative; and in the IDANG OCTC (depending on the selected route) to ensure visibility for aircraft pilots, both during normal flight and when aided by night vision systems. Night vision goggles and Aviator's Night Vision Imaging System (ANVIS) often employ Class A, B, and C filters. These filters can reduce LED sources that emit light in the visible spectrum. The RTO lights overcome this obstacle by combining visible red LEDs and infrared LEDs in a single unit. This obstruction light system utilizes a unique optical, electrical, and mechanical design. The RTO is a universal, compact, and efficient obstruction light that has been Electrical Testing Laboratories (ETL) certified to Federal Aviation Administration (FAA) requirements. In

order to ensure that the intensity of lighting is not so bright as to render the NVGs ineffective, the Proponents propose to use equipment with peak lighting intensities of 860 nanometers for the infrared lights and 30-50 candelas for red lighting.

2.2 ALTERNATIVE DEVELOPMENT

2.2.1 Alternatives Developed by the Proponents

In developing the Proposed Route, the Proponents have reported that they considered a number of options, collected data, identified major features on the ground, coordinated with land management agencies and landowners, and tried to minimize issues and effects related to implementing the proposal. The process used in evaluating alternatives while developing the Proposed Route is documented in the *Gateway West Transmission Line Project Siting Study* (IPC and RMP 2008). Alternative routes not evaluated in detail are discussed in Section 2.4.12, along with the BLM Interdisciplinary Team (IDT) rationale for not considering them. Maps showing the locations of these eliminated routes are included in Appendix O.

The Proponents must meet the WECC minimum reliability criteria for transmission lines to prevent the loss of multiple circuits from a single event such as a wildland fire. This was a major constraint on what alternatives the Proponents could consider in detail. See Chapter 1, Section 1.3.5, for more detail regarding reliability requirements of the regional and national electrical grid.

The Proponents' overall Project siting approach was to use the WWE corridor and other designated ROW corridors and existing utility corridors where feasible, unless there was a compelling reason not to. In many cases the proposed routing closely follows the WWE corridor; however, the WWE corridor is only mapped for federal land, and about half of the lands along the route are privately owned. In some locations, the WWE corridor is too narrow to allow for the minimum separation requirement from existing transmission lines already in the corridor (see the discussion in Chapter 1, Section 1.3.5), or no WWE corridor has been designated between required substation interconnections. Reasons for not using the WWE corridors are listed by each segment for the Proposed Route or Route Alternatives. Section 2.4.13 and Table 2.4-3 describe use of the WWE corridor by alternative. Appendix A, Figures A-2 through A-12 show the WWE corridor as determined in the Final PEIS, published November 2008 (DOE and BLM 2008).

2.2.2 Alternatives Developed by the BLM

The BLM IDT developed alternatives to the Proposed Route in order to address issues raised by land management agencies, including the BLM and Forest Service, state and local agencies, and the public. Proponents provided input on the reasonableness and suitability of the BLM-developed alternatives (IPC and RMP 2008).

The IDT used the following criteria to evaluate alternatives for further consideration:

- Did the alternative meet the underlying purpose and need for the proposed Project?
- Was the alternative technically and economically feasible?
- Did the alternative address and resolve identified issues?

- Did the alternative cause measurably less adverse environmental effects (fewer detrimental effects, less severe effects, or shorter-term effects) than the Proposed Route for at least some resources?

2.2.3 Alternatives Identified Since Release of the Draft EIS

Following issuance of the Draft EIS, the BLM conducted 17 open house meetings and held a 90-day comment period to receive public comments. The BLM also met with counties, local task forces, and state and federal agencies to resolve issues raised by these entities. These efforts resulted in numerous changes to the Project, including dropping proposed Segment 1E, making changes to existing routes, and identifying additional alternative routes (see Section 1.1.1, Changes Between Draft and Final EIS, in Chapter 1). The additional routes and route changes are described in this chapter and analyzed in detail in Chapter 3.

2.2.4 Proposed Plan Amendments and Amendments Associated with Alternative Routes

Table 2.2-1 lists the proposed amendments to BLM land use plans affected by the Project along the BLM's Preferred Route (see Section 2.4.1 for a description of the Preferred Route). Table 2.2-2 lists the associated amendments to BLM plans along other routes. Table 2.2-3 lists the proposed amendments to Forest Service plans along the BLM and Forest Service Preferred Routes and alternative routes. In some cases, the proposed and alternative routes are not in compliance with the management objectives provided in the plans. In these cases, the BLM and the Forest Service can deny the Project, require modifications to the proposed and alternative routes so that they are in compliance, or amend the applicable plan. Therefore, the land use plan amendments in Tables 2.2-1 through 2.2-3 are included as part of the analysis of the proposed and alternative routes. The effects of these amendments are analyzed in Chapters 3 and 4. Appendix F describes the proposed amendments and Appendix G provides the analysis for VRM–, Scenic Integrity Objective– (SIO-), and Visual Quality Objective– (VQO-) driven amendments. In some cases, the amendments proposed in the Draft EIS are no longer needed due to route changes or other causes whereas in other cases new amendments are proposed for routes added between the Draft and Final EIS (see Section 1.1.1 in Chapter 1). As part of the ROD, the BLM and Forest Service will decide whether to implement an amendment, as well as determine the significance of an amendment, when the corresponding route or alternative is selected.

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Green River RMP	1	Preferred 4	VRM – Management actions on public lands with a Class II visual resource management classification must be designed to blend into and retain the existing character of the natural landscape.	Allow the construction and placement of the Gateway West Transmission Line on public land classified as VRM Class II in section 10, T. 20 N., R. 109 W.	Appendix G-1, 3.2.1.5
Kemmerer RMP	2	Preferred 4	Decision 5010 – Heritage Resources – Protect the physical evidence of NHTs designated under the National Trails System Act (ruts and traces, graves, campsites, landmarks) that exist on lands within federal jurisdiction by prohibiting all surface-disturbing activities that do not benefit the preservation and (or) interpretation of trails within the following distances: (1) Class 1 segments: ¼-mile on each side of trail segments and within a ¼-mile radius of gravesites and landmarks. (2) Class 2 segments: 500 feet on each side of trail segments and within a 500-foot radius of gravesites and landmarks. (3) Class 3 segments: 100 feet on each side of trail segments and within a 100-foot radius of gravesites and landmarks. Crossings at right angles to trails could be permitted on a case-by-case basis. This could require boring beneath the trail trace. (see Glossary for definitions of NHT and Class Segments).	Allow the Gateway West Project to cross the Sublette NHT in section 11, T. 23 N, R. 118 W. Place towers as far from the trail as feasible.	3.2.1.5, Appendix G-1, 3.3.3.3, 3.3.3.4
	3	Preferred 4	Decision 6051 – VRM Class II areas: A visual corridor extending up to 1 mile on either side of the Sublette Cutoff and the Slate Creek Cutoff north of US 189 and east of Slate Creek Ridge in consideration of NHT views…	Allow the Gateway West Project without changing the VRM class for areas north and east of highway 30/State Highway 89 affected by the route.	Appendix G-1, 3.2.1.5, 3.2.2.3, 3.3.3.3, 3.3.3.4, 3.17.1.5

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route (continued)

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP (cont.)	4	Preferred 4	Decision 6054 - Manage the viewsheds of NHT segments as follows: (1)(a) Preserve the viewshed within 3 miles of Class 1 segments north and east of U.S. Highway 30 and west of the Hams Fork river (Tunp/Dempsey Trail area), where the visual characteristics of the setting contribute to the eligibility of the site, by managing projects in federal sections to retain the existing character of the landscape so developments do not dominate the visible area to detract from the feeling or sense of the historic time period of the trail setting. Design ROW to preserve the visual integrity of the settings consistent with the BLM visual resources handbook and manual. (1)(b) Preserve the viewshed within 1 mile of Class 1 segments outside of the Tunp/Dempsey Trail area and the checkerboard land pattern area, where the visual characteristics of the setting contribute to the eligibility of the site, by managing projects in federal sections to retain the existing character of the landscape so developments do not dominate the visible area to detract from the feeling or sense of the historic time period of the trail setting. Design ROW to preserve the visual integrity of the settings consistent with the BLM visual resources handbook and manual. (1)(c) On Class 1 trail segments within the checkerboard land pattern area, manage the viewshed to preserve the existing character of the landscape within the federal section where the trail occurs. (2)(a) Preserve the viewshed within ½ mile of Class 2 segments that exist in blocked federal lands west of U.S. Highway 189 (south of Kemmerer) and south of U.S. Highway 30 by managing projects in federal sections to retain the existing character of the landscape so developments do not attract the attention of the casual observer. (2)(b) On Class 2 trail segments outside of the area described in (2)(a) manage the viewshed to preserve the existing character of the landscape within the federal section where the trail occurs. (2)(c) On Class 3 segments, manage the viewshed according to the appropriate VRM class for the area."	Allow the Gateway West Project where it would otherwise be in conflict with the historic viewshed preservation management actions. Micrositing and mitigation measures will be implemented to minimize visual impacts to affected historic sites and trail segments.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route (continued)

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP (cont.)	5	Preferred 4	Decision 7014 - Manage the Rock Creek/Tunp area of significant resource concern with the objective of preserving and enhancing the critical wildlife habitats and cultural values that occur within the area…. Restrict all new ROW actions to existing disturbance zones. No net loss of habitat function allowed from any construction activity within the boundaries of the management area. Successful re-establishment or improvement of habitats could offset any new disturbance areas. Pursue opportunities to reclaim existing roads not necessary to attain management objectives. Restrict OHV use to existing roads and trails. No off-trail travel is allowed without prior approval from the authorized officer. Manage NHTs and sites, settings, and all surface-disturbing activities to retain the existing character of the landscape in federal sections so developments do not dominate settings to detract from the feeling or sense of the historic period of use…"	Allow the Gateway West Project where it would otherwise be in conflict with the management objectives of Decision 7014. Micrositing and mitigation measures will be required to minimize impact to affected areas and resources.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.6.1.5, 3.17.1.5, 3.10.1.5, 3.11.2.2
Twin Falls MFP	6	Preferred 9	L-4.1 Allow future major power transmission lines (line of at least 46-138 kV which originate and terminate outside of the MFP area) to be constructed within the recommended corridors. Also allow construction of transmission lines between the corridors. Do not permit power lines to the west or the east of the two corridors. Exempt service lines from restriction.	Allow the Gateway West Transmission Line ROW outside of existing corridors.	3.2.1.5, 3.3.3.3, 3.3.3.4, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.2.3
	7	Preferred 9	VRM I – VRM 1.1 Manage Salmon Falls Canyon between the Salmon Falls Dam and Lilly Grade for natural ecological change in accordance with a VRM Class I designation. This designation would include only the area from rim to rim. Manage the canyon from Lilly Grade to Balanced Rock under a VRM Class II designation. 2. The ACEC is subject to the following resource restrictions….(2) avoid utility rights-of-way….management of the Salmon Falls ACEC in the Twin Falls Resource Area will be the same as in the Jarbidge Resource Area	Allow the Gateway West Project without changing the VRM classification in the VRM class II designated area near Salmon Falls Creek. Allow the Gateway West Transmission Line Project to cross Salmon Falls canyon through the ACEC. Tower location and crossing alignment will be sited to minimize visual intrusion.	Appendix G-1, 3.2.1.5, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.1.5

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route (continued)

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Jarbidge RMP	8	Preferred 8	MUA-3 Utility avoidance/restricted area – three paleontological areas (Sugar Bowl, Glenns Ferry, & McGinnis Ranch) and Oregon Trail ruts (7,200 acres/22.5 miles) to overhead and surface disturbance and underground utilities.	The current Lands decision is amended to reclassify the area identified as restricted in Section 35, T. 04 S., R. 09 E. to 'avoidance' in order to accommodate a 500-kV powerline right of way.	3.2.1.5, 3.17.1.5
	9	Preferred 9	MUA-14 – Protect the Salmon Falls Creek Canyon (rim to rim) for its natural and scenic values through special designation and management. C) Lands, 1. Utility avoidance/restricted area – entire canyon (2,947 ac) (overhead, surface, underground). I) Special Designations – Area: Salmon Falls Creek and Canyon; Type of Designation: ACEC, SRMA, and ONA; Acres/Miles: 2,947/30	Allow the Gateway West Transmission Line Project to cross the canyon and Special Designation Areas (including the Salmon Falls Creek ACEC, SRMA, and ONA). Tower locations and crossing alignment will be sited to minimize visual intrusion.	3.2.1.5, 3.2.3, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.1.5
	10	Preferred 9	The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on BLM lands. The Degree of alterations to the natural landscape will be guided by the criteria established for the four Visual Resource Management Classes as outlined in BLM 8400. VRM Classes will be managed as shown on Map 9	Allow the Gateway West Transmission Line Project to cross VRM II classified land across Salmon Falls Creek and from Lilly Grade, northwest, paralleling the canyon for approximately 4 miles.	Appendix G-1, 3.2.1.5, 3.3.3.5, 3.3.3.3
	11	Preferred 8	Cultural Resources – The existing ruts of the main route, north and south alternate routes of the Oregon Trail and Kelton Road will be protected by not allowing incompatible uses to occur within ½ mile corridor through which these routes pass.	The existing ruts of the main route, north and south alternate routes of the Oregon Trail and Kelton Road will be protected by not allowing incompatible uses to occur within ½ mile corridor through which these routes pass, except where the Gateway West Transmission Line Project crosses the trail, where no surface disturbance will be allowed within 330 feet of the trail.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5
	12	Preferred 8	The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on BLM lands. The degree of alterations to the natural landscape will be guided by the criteria established for the four Visual Resource Management Classes as outlined in BLM 8400. VRM Classes will be managed as shown on Map 9.	The VRM Management decision and Map 9 are amended to accommodate a major powerline R/W. Approximately 5,200 acres of VRM Class I associated with the Oregon Trail is reclassified to Class III.	Appendix G-1, 2.4.9, 3.2.1.5, 3.2.3.3, 3.3.3.3,3.3.3.4, 3.17.1.5

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route (continued)

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Jarbidge RMP (cont.)	13	Preferred 9	The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on BLM lands. The degree of alterations to the natural landscape will be guided by the criteria established for the four Visual Resource Management Classes as outlined in BLM 8400. VRM Classes will be managed as shown on Map 9.	The area within the WWE Corridor will be reclassified as VRM III.	Appendix G-1, 2.4.9, 3.2.1.5, 3.2.3.3, 3.3.3.3, 3.3.3.4, 3.17.1.5
Morley Nelson Snake River Birds of Prey National Conserv-ation Area (SRBOP) RMP	14	Preferred 9	Utility and Communication Corridors – Restrict major utility developments to the two utility corridors identified (Lands Map 3).	Restrict major utility developments to the two utility corridors identified (Lands Map 3[1/]) and allow an additional major powerline ROW, in conjunction with the compensatory off-site mitigation [identified in Appendix F-1, Section 3.9.4, of the Gateway West Final EIS].	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5
Bennett Hills/ Timmer-man Hills MFP	15	Preferred 8	REC 4.1 – No management activity should be allowed to cause any evident changes in the form, line, color, or texture that is characteristic of the landscape within this Class II area.	The VRM Class II area within 3,000 feet to the north of the existing transmission line ROW will be reclassified to VRM III (including the existing ROW).	Appendix G-1, 3.2.1.5
	16	Preferred 8	REC 14.6 – Prohibit all land disturbing developments and uses on archeological sites.	Prohibit all land disturbing developments within 330 feet of the Oregon Trail and manage archaeological sites as required by Section 106 of the National Historic Preservation Act.	3.3.3.3, 3.3.3.4,
Kuna MFP[2/]	17	Preferred 8	L-4.1 – Confine major new utility R/Ws (i.e., 500 kV or larger or 24-inch pipeline) to existing corridors, as shown on Overlay L-4. The R/Ws will be subject to reasonable stipulations to protect other resource uses.	L-4.1 – Confine major new utility R/Ws (i.e., 500 kV or larger or 24-inch pipeline) to existing corridors as shown on Overlay L-4. The R/Ws will be subject to reasonable stipulations to protect other resource uses. Amend Overlay L-4 to add a major transmission line (500 kV) right of way.	3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.2.5

Table 2.2-1 Proposed BLM Plan Amendments for the BLM's Preferred Route (continued)

Plan	No.	Routes	Management Direction	Proposed Amendment	EIS Section
Kuna MFP (cont.)	18	Preferred 8	CRM-2.1 – Manage parcels containing historic site 10-AA-155 and a 1/4-mile-wide corridor on either side of the Union Pacific (Oregon Short Line) Railroad for the protection of cultural resource values. Nominate these sites to the National Register of Historic Places, but do not designate them as ACECs (Other recommended management is listed).	Allow one transmission line crossing with micrositing required to minimize presence in the restricted area such that the transmission line will not affect the railroad's status as a Historic Place.	3.2.1.5, 3.3.2.5, 3.3.3.5

1/ Segment 8 uses the designated corridor in Township 3 South, Range 7 East east of Mountain Home, Idaho. Segment 9 uses the designated corridor in Township 3 South, Range 1 and 2 West between Oreana and Murphy, Idaho.

2/ Additional alternatives would cross the area managed under the Kuna MFP; however, these are addressed under the SRBOP RMP, which replaces the Kuna MFP in the NCA.

ROW or R/W: right-of-way; WSR: Wild and Scenic River; WWEC: West-wide Energy Corridor; VRM: Visual Resource Management; NCA – National Conservation Area; NHT: National Historic Trail; ACEC: Area of Critical Environmental Concern; SRMA: Special Recreation Management Area; ONA: Outstanding Natural Area; T – Township; R – Range

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP	Alternative 4F	Decision 5010 - Heritage Resources – Protect the physical evidence of NHTs designated under the National Trails System Act (ruts and traces, graves, campsites, landmarks) that exist on lands within federal jurisdiction by prohibiting all surface-disturbing activities that do not benefit the preservation and (or) interpretation of trails within the following distances: (1) Class 1 segments: ¼-mile on each side of trail segments and within a ¼-mile radius of gravesites and landmarks. (2) Class 2 segments: 500 feet on each side of trail segments and within a 500-foot radius of gravesites and landmarks. (3) Class 3 segments: 100 feet on each side of trail segments and within a 100-foot radius of gravesites and landmarks. Crossings at right angles to trails could be permitted on a case-by-case basis. This could require boring beneath the trail trace. (see Glossary for definitions of NHT and Class Segments).	Protect the physical evidence of NHTs designated under the National Trails System Act (routes and traces, grades, campsites, landmarks) that exists on lands within federal jurisdiction by prohibiting all surface disturbing activities that do not benefit the preservation and or interpretation of trails within the following distances: Class I segments: ¼ mile on each side of trails segments and within ¼ mile radius of gravesites and landmarks …Crossings at right angles to trails could be permitted on a case-by-case basis with micrositing and mitigation. Alternative 4F: Allow the Gateway West Project to cross the Sublette NHT in section 12, T. 23 N, R. 114 W. Place towers as far from the trail as feasible.	3.2.1.5, Appendix G-1, 3.3.3.3, 3.3.3.4
	Alternatives 4B, 4C, 4D, 4E, 4F	Decision 6051 - VRM Class II areas: A visual corridor extending up to 1 mile on either side of the Sublette Cutoff and the Slate Creek Cutoff north of US 189 and east of Slate Creek Ridge in consideration of NHT views…	Alternatives 4B, 4C, 4D, 4E: Reclassify the VRM Class designation to VRM Class III in the portion of the planning area south and west of U.S. highway 30 (the highway) beginning on a north-south line along the high ridgeline approximately ¼ mile west of the current active coal leases (west of the town of Kemmerer); south along the high ridgeline to the ridgeline behind the active coal leases in Sec 25, T21N, R117W; then west following the high points of the topography approximately 3 miles south of the highway to Sec 28, T21N, R118W; then north-west following the high points of the topography within approximately 3 miles of the highway to Sec 18, T21N, R118 W; then north-west following the high points to within approximately ½ mile of the highway in Sec 12, T21N, R118W; then west to the junction of US 30/State Highway 89. Alternatives 4C and 4E: For routing north and east of Highway 30/State Highway 89, allow the Gateway West Project without changing the VRM class for areas affected by the route. Alternative 4F: Allow the Gateway West Project without changing the VRM class for areas affected by the route.	Appendix G-1, 3.2.1.5, 3.2.2.3, 3.3.3.3, 3.3.3.4, 3.17.1.5

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP (cont.)	Alternative 4F	Decision 6054 - Manage the viewsheds of NHT segments as follows: (1)(a) Preserve the viewshed within 3 miles of Class 1 segments north and east of U.S. Highway 30 and west of the Hams Fork river (Tunp/Dempsey Trail area), where the visual characteristics of the setting contribute to the eligibility of the site, by managing projects in federal sections to retain the existing character of the landscape so developments do not dominate the visible area to detract from the feeling or sense of the historic time period of the trail setting. Design ROW to preserve the visual integrity of the settings consistent with the BLM visual resources handbook and manual. (1)(b) Preserve the viewshed within 1 mile of Class 1 segments outside of the Tunp/Dempsey Trail area and the checkerboard land pattern area, where the visual characteristics of the setting contribute to the eligibility of the site, by managing projects in federal sections to retain the existing character of the landscape so developments do not dominate the visible area to detract from the feeling or sense of the historic time period of the trail setting. Design ROW to preserve the visual integrity of the settings consistent with the BLM visual resources handbook and manual. (1)(c) On Class 1 trail segments within the checkerboard land pattern area, manage the viewshed to preserve the existing character of the landscape within the federal section where the trail occurs. (2)(a) Preserve the viewshed within ½ mile of Class 2 segments that exist in blocked federal lands west of U.S. Highway 189 (south of Kemmerer) and south of U.S. Highway 30 by managing projects in federal sections to retain the existing character of the landscape so developments do not attract the attention of the casual observer. (2)(b) On Class 2 trail segments outside of the area described in (2)(a) manage the viewshed to preserve the existing character of the landscape within the federal section where the trail occurs. (2)(c) On Class 3 segments, manage the viewshed according to the appropriate VRM class for the area.”	Allow the Gateway West Project where it would otherwise be in conflict with the historic viewshed preservation management actions. Micrositing and mitigation measures will be implemented to minimize visual impacts to affected historic sites and trail segments.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP (cont.)	Alternatives 4C, 4E	Decision 7014 - Manage the Rock Creek/Tunp area of significant resource concern with the objective of preserving and enhancing the critical wildlife habitats and cultural values that occur within the area…. Restrict all new ROW actions to existing disturbance zones. No net loss of habitat function allowed from any construction activity within the boundaries of the management area. Successful re-establishment or improvement of habitats could offset any new disturbance areas. Pursue opportunities to reclaim existing roads not necessary to attain management objectives. Restrict OHV use to existing roads and trails. No off-trail travel is allowed without prior approval from the authorized officer. Manage NHTs and sites, settings, and all surface-disturbing activities to retain the existing character of the landscape in federal sections so developments do not dominate settings to detract from the feeling or sense of the historic period of use…"	Allow the Gateway West Project where it would otherwise be in conflict with the management objectives of Decision 7014. Micrositing and mitigation measures will be required to minimize impact to affected areas and resources.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.6.1.5, 3.17.1.5, 3.10.1.5, 3.11.2.2
Pocatello RMP	Proposed 5, Proposed 7,	Objective VR-1.1. Manage visual resources according to established guidelines for Visual Resource Management (VRM) classes. Action VR-1.1.1. Public lands will continue to be managed according to the following VRM class designations (Figure 6): Class I - 11,200 acres Class II - 78,600 acres Class III - 221,000 acres Class IV - 303,000 acres Action VR-1.1.3. Mitigation measures will be identified to reduce visual contrasts with rehabilitation actions identified to address landscape modifications on a case-by-case basis."	Allow the Gateway West Transmission Line Project without changing the VRM classification. Mitigation measures have been identified to reduce visual contrast and rehabilitation actions identified to address landscape modifications on a case-by-case basis (see Table 2.7-1).	Appendix G-1, 3.2.1.5, 3.10.1.5, 3.11.2.2, 3.17.1.5
Cassia RMP	Proposed 7	MA-11: Limit rights-of-way (ROWs) to existing facilities/localities	Allow the Gateway West Transmission Line Project.	3.2.1.5, 3.3.3.4, 3.6.1.5, 3.10.1.5, 3.11.2.2, 3.17.2.3

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Cassia RMP (cont.)	Alternative 7K	Preserve scenic values in the Goose Creek Travel Zone (within ½ mile of the Goose Creek Road between Wilson Pass and the Utah border).	Allow the Gateway West Transmission Line Project without changing the VRM classification.	3.2.1.5, 3.3.3.3, 3.3.3.4, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.2.3
	Alternatives 7E, 7K	Consideration of scenic values will be included in the analysis of all activities involving alteration of the natural character of the landscape. The degree of alteration allowed is determined through an inventory process which results in the classification of all public lands into one of five Visual Resource Management classes, each class allowing for a different degree of modification.	Allow the Gateway West Transmission Line Project as a visually altering action resulting in the reclassification of 1,381 acres of VRM III to VRM IV in the Cottonwood Creek area (Alternative 7K), and 39 acres of VRM II to VRM III in the Spring Canyon area (Alternative 7E).	Appendix G-1, 3.2.1.5
Twin Falls MFP	Alternative 9A	L-4.1 Allow future major power transmission lines (line of at least 46-138 kV which originate and terminate outside of the MFP area) to be constructed within the recommended corridors. Also allow construction of transmission lines between the corridors. Do not permit power lines to the west or the east of the two corridors. Exempt service lines from restriction.	Allow the Gateway West Transmission Line Project outside of existing corridors.	3.2.1.5, 3.3.3.3, 3.3.3.4, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.2.3
Jarbidge RMP	Alternative 8A	MUA-7 C) Lands, 1. Utility avoidance/restricted area – Oregon Trail 5,888 acres (overhead, surface, underground); Dove Springs (160 acres) and 96 paleontologic sites (surface and underground).	Lands, 1. Utility avoidance/restricted area – no surface disturbance within 330 feet of the Oregon Trail; Dove Springs (160 acres); and 96 paleontologic sites (surface and underground).	Appendix G-1, 3.2.1.5, 3.3.3.3,3.3.3.4, 3.13.2.3
	Alternative 8A Alternatives 9B, 9D/9G	The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on BLM lands. The degree of alterations to the natural landscape will be guided by the criteria established for the four Visual Resource Management Classes as outlined in BLM 8400. VRM Classes will be managed as shown on Map 9.	The area within the WWE Corridor will be reclassified as VRM III. Alternative 8A: The VRM decision and Map 9 are amended to accommodate a major powerline R/W. Approximately 2,800 acres of VRM Class 1 area associated with the Oregon Trail is reclassified to Class III.	Appendix G-1, 2.4.9, 2.4.10, 3.2.1.5, 3.2.3.3,3.3.3.3 3.3.3.4, 3.17.1.5
	Alternative 8A	Utility avoidance/restricted area – three paleontological areas (Sugar Bowl, Glenns Ferry, & McGinnis Ranch) & Oregon Trail ruts (7,200 acres/22.5 miles) to overhead and surface disturbance and underground utilities.	The current lands decision is amended in the area identified as restricted in Section 2, T. 05 S., R. 09 E. to reclassify these areas as avoidance to accommodate a 500kV powerline right of way."	3.2.1.5, 3.17.1.5

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Morley Nelson Snake River Birds of Prey National Conserv-ation Area (SRBOP) RMP	Proposed 8	VRM II Protect the Oregon Trail and management areas along the Snake River Canyon as a Visual Resource Management (VRM) Class II area, the Army National Guard Orchard Training Area[1/] (OTA) as Class IV and remaining areas as Class III. [Visual Resource Management (VRM Map)]	Manage the areas along the Oregon Trail and the Snake River Canyon as VRM Class II, the OTA as Class IV and remaining areas as Class III. Approximately 6,400 acres of Class II areas associated with the Oregon Trail and scenic values associated with the Snake River Canyon would be designated as Class III to accommodate a major powerline R/W.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5
	Proposed 8	2.16 Transportation – Close the following areas to motorized vehicles: … Halverson Bar – 1,150 acres (Transportation Map A-145)	Allow the Gateway West Project to cross the Halverson Bar non-motorized area.	2.4.9.2, 2.4.9.4, 3.17.1.5, 3.17.2.4
	Alternatives 9D, 9G	2.16 Transportation – Close the following areas to motorized vehicles: … Cove – 1,600 acres (Transportation Map A-145)	Allow the Gateway West Project to cross the Cove non-motorized area.	2.4.9.2, 2.4.9.4, 3.17.1.5, 3.17.2.4
	Alternatives 8E, 9D, 9F, 9G, 9H	VRM II Protect the Oregon Trail and management areas along the Snake River Canyon as a Visual Resource Management (VRM) Class II area, the Army National Guard Orchard Training Area (OTA) as Class IV and remaining areas as Class III. [Visual Resource Management (VRM Map)]	Manage the areas along the Oregon Trail and the Snake River Canyon as VRM Class II, the OTA as Class IV and remaining areas as Class III. Approximately 3,100 acres of Class II areas associated with the Oregon Trail and scenic values associated with the Snake River Canyon is designated as Class III to accommodate a major powerline ROW. For Alternative 9G/9H: VRM Class II areas that are in view of the proposed powerline where micrositing would not sufficiently mitigate for VRM Class II impacts, would be inconsistent with the VRM II classification and would be reclassified to VRM III. In these locations, VRM Class II areas within 250 feet of the route centerline would be reclassified to VRM Class III, taking into account the need for a 0.5 mile buffer distance from NHTs. Mitigation will include adjusting the alignment to ensure a 0.5 mile buffer from NHTs is maintained.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
SRBOP RMP (cont.)	Proposed 8, Alternatives 8B, 8D, 8E; Proposed 9, Alternatives 9D, 9E, 9F, 9G, 9H	Sensitive Plant Habitat Include in all BLM authorizations permitting surface disturbing activities (non-grazing), requirements that (1) affected areas be reseeded with a perennial vegetative cover, and (2) surface disturbing activities be located at least 1/2 mile from occupied sensitive plant habitat. "Require all permit holders in slickspot peppergrass habitat to conform to applicable conservation measures from the CA (Appendix 8)"	Gateway West will be allowed within 0.5 mile of occupied, sensitive plant habitat, with appropriate mitigation to protect sensitive plants, including slickspot peppergrass. Environmental monitors will survey for and mark slickspots and aboveground populations of slickspot peppergrass within 50 feet of the construction area prior to ground disturbance (including roads) in potential or occupied slickspot peppergrass habitat. No construction shall occur within 50 feet of any slickspot peppergrass plants or slickspots found by the environmental monitor. Also, construction shall not occur within 50 feet of previously known occupied slickspot peppergrass areas, based on Idaho CDC data, even if aboveground plants are not observed by the environmental monitor. Within proposed critical habitat, impacts to Primary Constituent Elements, such as native sagebrush/forb vegetation, will be avoided to the extent practicable. Seeding during reclamation in areas of suitable habitat will use methods that minimize soil disturbance such as no-till drills or rangeland drills with depth bands. Reclamation will use certified weed-free native seed. Excess soils will not be stored or spread on slickspots. Require all permit holders in slickspot peppergrass habitat to conform to applicable conservation measures from the CA (Appendix 8). The Gateway West Transmission Line will be allowed to remove limited amounts of sagebrush for construction while maintaining a distance of at least 50 feet from existing or known peppergrass occurrences. These activities will be monitored and mitigated as described above.	3.6.1.5, 3.7.2.3
	Proposed 8, Alt. 8E, Alts. 9D, 9F, 9G, 9H	Retain all public lands in the 43,000-acre ROW avoidance area to protect the visual corridor along the historic Oregon Trail and the resources along the Snake River canyon (Lands Map 1).	Retain all public lands in the 43,000-acre ROW avoidance area to protect the visual corridor along the historic Oregon Trail and the resources along the Snake River canyon. Allow the Gateway West Transmission Line Project with required mitigation and as appropriate based upon Section 106 consultation.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.2.3

Table 2.2-2. Amendments to BLM Plans Associated with Other Routes (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
SRBOP RMP (cont.)	Proposed 8, Alternatives 8E, 9D, 9F, 9G, 9H	This SRMA consists of 22,300 acres in the Snake River Canyon downstream from Grandview, Idaho that is managed for the protection of cultural and scenic values. (2.14 Recreation 2-20).	This SRMA consists of 15,900 acres in the Snake River Canyon downstream from Grandview, Idaho that is managed for the protection of cultural and scenic values. The SRMA designation has been reduced by approximately 6,400 acres to accommodate a major powerline.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.1.5
	Alternatives 9D, 9G	C.J. Strike SRMA: This SRMA consists of 20,000 acres surrounding C.J. Strike Reservoir along the Snake River. The purpose of the SRMA is to provide enhanced recreation management associated with the reservoir, and protection of the Oregon Trail adjacent to the reservoir (2.14 Recreation 2-20).	C.J. Strike SRMA: This SRMA consists of 16,900 acres surrounding C.J. Strike Reservoir along the Snake River. The purpose of the SRMA is to provide enhanced recreation management associated with the reservoir, and protection of the Oregon Trail adjacent to the reservoir. The SRMA designation has been reduced by approximately 3,100 acres to accommodate a major powerline R/W.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.1.5
	Proposed 8, Alternatives 8E, 9D, 9F, 9G, 9H	Utility and Communication Corridors – Restrict major utility developments to the two utility corridors identified (Lands Map 3)	Restrict major utility developments to the two utility corridors identified and the major powerline R/W (Lands Map 3).	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5
Kuna MFP[2/]	Alternative 8C	CRM-2.1 – Manage parcels containing historic site 10-AA-155 and a 1/4-mile-wide corridor on either side of the Union Pacific (Oregon Short Line) Railroad for the protection of cultural resource values. Nominate these sites to the National Register of Historic Places, but do not designate them as ACECs (Other recommended management is listed).	Allow one transmission line crossing with micrositing required to minimize presence in the restricted area such that the transmission line will not affect the railroad's status as a Historic Place.	3.2.1.5, 3.3.2.5, 3.3.3.5
Bruneau MFP	Proposed 9	Manage all public lands in a manner which will protect and maintain the existing visual qualities, provide for enhancement where consistent with management policies, and provide for rehabilitation of land which presently do not meet the visual quality standards of surrounding lands. Use VRM contrast rating and project application design process for all management activities without unduly reducing commodity production or limiting program effectiveness.	The entire VRM II parcel near Castle Creek will be reclassified to VRM III.	Appendix G-1, 3.2.1.5
	Proposed 9	Designate 136,000 acres as VRM Class II where activities are designed and located to blend into the natural landscape and not visually apparent to the casual visitor.	The entire VRM II parcel near Castle Creek will be reclassified to VRM III.	Appendix G-1, 3.2.1.5, 3.17.2.3

1/ The Orchard Training Area is now the Orchard Combat Training Center.

2/ The SRBOP RMP replaces the Kuna MFP within the NCA.

ACEC: Area of Critical Environmental Concern; NCA – National Conservation Area; NHT: National Historic Trail; ROW or R/W: right-of-way; SRMA: Special Recreation Management Area; VRM: Visual Resource Management; WSR: Wild and Scenic River; WWEC: West-wide Energy Corridor;

Table 2.2-3. Amendments to Forest Service Plans

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Medicine Bow National Forest Revised Land and Resource Manage-ment Plan (Forest Plan)	Proposed 1W	TES Standard 4: Within each occupied northern goshawk territory, select three nests and protect 30 acres of dense vegetation surrounding each, defining the boundaries of each area based on habitat quality. If fewer than 3 nests are found within an occupied territory, substitute 30-acre areas with characteristics of nesting habitat.	The Gateway West Transmission Line Project will be allowed and the Medicine Bow Forest Plan timing restrictions for northern goshawks will be followed.	3.6.2.2, 3.6.2.3, 3.10.1.5, 3.10.2.2, 3.10.2.3, 3.11.2, 3.11.2.2, 3.11.2.3
	Proposed 1W	TES Standard 5: Within each occupied northern goshawk territory, designate a northern goshawk post-fledging area (PFA) of a minimum of 200 acres that includes the three 30-acre nest sites selected. The large tree component within the PFA should include snags, down dead wood, and clumps of trees with interlocking crowns. Within the PFA, prohibit management activities that may degrade goshawk foraging habitat.	The Gateway West Transmission Line Project will be allowed and the Medicine Bow Forest Plan timing restrictions for northern goshawks will be followed.	3.6.2.2, 3.10.1.5, 3.10.2.2, 3.10.2.3, 3.11.2.2, 3.11.2.3,
	Proposed 1W	TES Standard 11: Allow no loss or degradation of known or historic habitat for the boreal toad, wood frog, or northern leopard frog.	The Gateway West Transmission Line Project will be allowed and mitigation measures applied to protect to the northern leopard frog (the boreal toad and wood frog are not found in the Project area).	3.10.1.5, 3.10.2.2, 3.11.2, 3.11.2.2, 3.11.2.3, 3.6.2.2
	Proposed 1W	Scenery Standard 1: Apply the Scenery Management System (SMS) to all NFS lands. Travel routes, use areas, and water bodies determined to be of primary importance are a concern Level 1 and appropriate scenic integrity objectives are established according to the SMS. Area has SIO of Moderate.	The Gateway West Transmission Line will be allowed and mitigation measures applied to minimize visual impacts.	3.2.1.5, 3.2.2.3, Appendix G-2, 3.17.1.5, 3.17.2.3
	Proposed 1W	Management Prescription 3.31 backcountry Recreation, Year-Round Motorized, General Standard 1: Allow uses and activities only if they do not degrade the primitive character of the area. Infrastructure 2: Prohibit new road construction or existing road reconstruction unless needed to honor existing rights.	Road construction and reconstruction associated with the Gateway West Transmission Line outside the WWE Corridor will be allowed and the land crossed by the Project roads will be allocated to Roaded Natural.	3.2.1.5, 3.10.1.5, 3.11.2.3, 3.6.1.5, 3.17.1.5, 3.19.2.3

Table 2.2-3. Amendments to Forest Service Plans (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Caribou Forest Plan	Proposed 4, Alternative 4G	Transportation and Utility Corridors, Standard 1. Existing and proposed rights-of-way of the following types shall be designated as corridors (Rx 8.1). This does not prevent the inclusion of lower-rated transmission lines or smaller pipelines within the corridors. --Communication lines and zones for interstate use. --Railroads. --Federal, state, interstate, and forest highways. --Electric transmission lines of 66 kV and greater, including fiber optics. --Oil, gas, slurry, or other pipelines 10 inches or larger in diameter. Guideline 7. Pipelines and other related utilities should share utility corridors except as needed to meet other resource goals.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area to allow the Gateway West Transmission Line Project. Follow BMPs and implement mitigation measures to minimize environmental impacts.	3.6.2.2, 3.6.2.3, 3.15.2, 3.17.2.3
	Proposed 4, Alternative 4G	Vegetation, Guideline 5. Use methods of vegetation treatment that emulate natural disturbance and successional processes.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area. Lands in this prescription “are likely to be permanently altered by human activities beyond the level needed to maintain natural appearing landscapes and ecological processes” (Forest Plan, page RFP 4-79).	3.6.2.2, 3.6.2.3, 3.15.2
	Proposed 4, Alternative 4G	Wildlife – Snag/Cavity Nesting Habitat. Standard 2: Snags with existing cavities or nests shall be the priority for retention. Guideline 2: Hard-snag densities for various biological potentials should be approximately as follows by forest type. Guideline 3: Retain live trees for future snag recruitment using guidelines in Table 3.4.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area. Maintaining biological potential for woodpeckers is not a consideration in Prescription 8.1 (Forest Plan, page RFP 4-79).	3.10.2.2
	Proposed 4, Alternative 4G	Scenic Resources. Standard 1: Objectives for scenery (either VQOs or SIOs) shall be met along Scenic or Historic Byways, Wild and Scenic Rivers, and other sensitive travel routes and special emphasis areas. Guideline 2: Until the Scenery Management System is fully implemented, projects should be planned and implemented to meet the Visual Quality Objectives (VQOs) as displayed on the Forest VQO map	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area to allow the Gateway West Transmission Line Project. Prescription 8.1 does not contain retention or partial retention (Forest Plan, page RFP 4-78).	3.2.2.3, Appendix G-2, 3.17.2.3

Table 2.2-3. Amendments to Forest Service Plans (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Caribou Forest Plan (cont.)	Proposed 4, Alternative 4G	Recreation, Guideline 4. Projects should be planned and implemented to meet the ROS as depicted on the Forest ROS map	The area within the ROW would be converted automatically to Roaded Natural when the ROW is designated as Prescription 8.1. The area within 375 feet of the edge of the ROW and within 500 feet of new permanent roads will be changed to Roaded Natural.	3.15.2, 3.17.2.3
	Proposed 4, Alternative 4G	Goshawk Nesting Territories. Standards and Guidelines in Forest Plan Table 3.5 and Management Standards and Guidelines within Active Goshawk Nesting Territories (Forest Plan page 3-30) apply to all forest types within active and historic goshawk nesting territories.	Permit the Gateway West Transmission Line with required mitigation. Standards and Guidelines for goshawk habitat will not apply within the ROW corridor or to approved access roads provided mitigation measures are implemented.	3.10.2.3, 3.11.2.2, 3.11.2.3
	Proposed 4, Alternative 4G	Transportation – Access, Guideline 1. The construction of new or maintenance of existing, motorized and non-motorized access routes should be consistent with the ROS class in which they are located.	The area within the ROW will be converted automatically to Roaded Natural when the ROW is designated as Prescription 8.1. The area within 375 feet of the edge of the ROW and within 500 feet of new permanent roads will be changed to Roaded Natural.	3.6.2.2, 3.6.2.3, 3.15.2, 3.17.2.3
	Proposed 4, Alternative 4G	Management Prescription 2.8.3 – Aquatic Influence Zone (AIZ). Lands, Guideline 1: Avoid locating facilities and utility corridors in Aquatic Influence Zones. General Riparian Area Management, Standard 1: Within legal authorities, ensure that the new proposed management activities within watersheds containing 303 (d) listed waterbodies improve or maintain overall progress toward beneficial use attainment for pollutants which led to listing. Waterbodies, Standard 1: Snags shall be maintained at = 80 percent of biological potential for woodpeckers. Timber, Guideline 1: Timber harvest, including fuelwood cutting, is generally not allowed unless: a) Catastrophic events such as fire, flooding, wind, or insect damage result in degraded riparian conditions, and unscheduled timber harvest (salvage and commercial fuelwood cutting) is selected as the most desirable management practice, or b) Silvicultural practices are necessary to achieve desired vegetation characteristics and desired AIZ attributes.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area. Allow AIZs to be crossed and timber to be removed within AIZs to allow the construction and maintenance of the transmission line project.	3.9.2, 3.17.2.3

Table 2.2-3. Amendments to Forest Service Plans (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Caribou Forest Plan (cont.)	Proposed 4, Alternative 4G	Management Prescription 3.2 – Semi-Primitive Recreation. Wildlife, Guideline 1: Maintain snags at = 60 percent biological potential for woodpeckers.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area. Maintaining biological potential for woodpeckers is not a consideration in Prescription 8.1 (Forest Plan, page RFP 4-79).	3.6.2.2, 3.6.2.3, 3.10.2.2
	Proposed 4, Alternative 4G	Management Prescription 5.2 – Forest Vegetation Management. Wildlife, Guideline 1: Maintain snag habitat at = 40 percent of the biological potential for woodpeckers. Vegetation, Guideline 1: Where aspen exists, it should be maintained or enhanced as a component through restoration treatments.	The management prescription for the ROW will be changed to Prescription 8.1 – Concentrated Development Area. Maintaining biological potential for woodpeckers is not a consideration in Prescription 8.1 (Forest Plan, page RFP 4-79). Aspen will not be enhanced within the ROW.	3.6.2.2, 3.6.2.3, 3.10.2.2
Sawtooth Forest Plan	Alternative 7K	VQO – All projects shall be designed to meet the adopted Visual Quality Objectives (VQOs) as displayed on the Forest VQO map. Duration of visual impacts from ground disturbance in vegetation removal activities to allow for herbaceous recovery of ground cover may extend three years in the foreground and middleground of Retention designations, and foreground and middleground Partial Retention (PR) designations. There should be minimal distraction from scenic quality in foreground PR from road construction, reconstruction, and other excavation management. Roads and other excavation may be visible in middleground and background landscapes, but should blend into the characteristic landscape of the surroundings. In areas designated as Modification, management activities may dominate the characteristic landscape but must use naturally established form, line, color, and texture. They should appear as a natural occurrence when viewed as middleground.	The Gateway West transmission line will be allowed; Mitigation measures, including micrositing and feathering the ROW edges, will be applied to minimize visual impacts.	3.2.1.5, Appendix G-2, 3.17.2.3

ROW or R/W: right-of-way; RFP – Revised Forest Plan; WWE: West-wide Energy; TES – threatened and endangered species

2.2.5 BLM Land Use Plan Amendments and the Environmental Analysis

The BLM land use planning regulations require all implementation actions to conform to the approved plan (43 CFR 1601.5-3). The Project would cross 12 planning areas, 7 that would require one or more plan amendments so the Project will conform to the respective plans. The plan amendments include allowing the approved ROW to be outside of a designated corridor, located in an avoidance area, or located within a sensitive resource buffer area. The 18 Proposed Plan Amendments are detailed in Table 2.2-1.

The BLM integrates the land use plan amendment process into the NEPA analysis process, but there is an important difference between the two processes at the Final EIS stage. In the NEPA process, the Final EIS responds to public comments provided on the Draft EIS, includes additions and corrections to the impact analysis, and, in the case of this project, identifies the BLM's Preferred Alternative. NEPA regulations provide for a public comment period on the Final EIS. The Final EIS public comment period for Gateway West is 60 days. Public comments made on the Final EIS are considered and addressed in the ROD.

In the land use plan amendment process, the BLM identified, in the Draft EIS, plan amendments that would be needed for any of the alternatives that are fully analyzed. These prospective plan amendments were presented in Section 2.2.4 and Appendices F and G of the Draft EIS. In the Final EIS, proposed plan amendments associated with the BLM Preferred Route are presented as Proposed Plan Amendments. Plan amendments associated with other routes not selected as the BLM's Preferred Route are not considered and no longer involved in the plan amendment process. The 18 BLM Proposed Plan Amendments are identified in Table 2.2-1. Proposed Plan Amendments may be "protested," as described in the next paragraph.

The BLM planning regulations (43 CFR 1610.5-2) provide for any person who participated in the planning and environmental analysis process and who has an interest that is or may be adversely affected by the planning decision (in this case any of the 18 Proposed Plan Amendments), may protest approval of the planning decision within 30 days from the date that the USEPA publishes the Notice of Availability of the Final EIS in the Federal Register. Protests are filed with the Director of the BLM in Washington, DC, and must meet strict filing requirements, including 1) the name, mailing address, telephone number, and interest of the person filing the protest; 2) a statement of the issue or issues being protested; 3) a statement of the plan amendment being protested; 4) a copy of all documents addressing the issue or issues that were submitted during the EIS process by the protesting party or an indication of the date the issue or issues were discussed for the record; and 5) a concise statement explaining why the State Director's decision is believed to be wrong. Detailed information on filing protests is provided in the Attachment to the "Dear Reader" letter, located at the beginning of this Final EIS. More information on the protest process may be reviewed at the BLM Protest Resolution Web site:
http://www.blm.gov/wo/st/en/prog/planning/planning_overview/protest_resolution.html.

To summarize, protests may be filed on any of the 18 Proposed Plan Amendments associated with the BLM's Preferred Route. Protests must be filed with the BLM Director within 30 days from the date that the Notice of Availability of the Final EIS is

published in the Federal Register. Protest content and issues must be specific to the Proposed Plan Amendment protested. Comments on the environmental analysis, the BLM's Preferred Routes, or any other matter associated with a decision to issue a ROW grant on public lands for any portion of the Project should be submitted to the Project Manager at: **BLM Wyoming State Office, P.O. Box 20879, Cheyenne, WY 82003**, by e-mail at: **Gateway_West_WYMail@blm.gov**, or by visiting the Project Web site at: **http//www.wy.blm.gov/nepa/cfodocs/gateway_west**. Comments must be submitted within 60 days from the date that the Notice of Availability of the Final EIS is published in the Federal Register.

2.3 NO ACTION ALTERNATIVE

The action triggering this environmental review is described in the Proponents' applications to BLM and the Forest Service for a ROW grant and a special use authorization, respectively, for the portion of the Project on federal lands. The agencies may deny the respective applications or approve the Project with or without conditions. Therefore, the No Action Alternative analyzed in the EIS is the predicted result of the denial of the applications. Under the No Action Alternative, Gateway West would not be constructed (no construction of the new substations, substation expansion, or the transmission line). No RMPs, MFPs, or Forest Plans would need to be amended if the No Action Alternative is selected. The objectives of the Project, which include providing increased transmission capacity and a more reliable transmission line system for transport of energy, including wind energy, to meet existing and future needs (as described in Section 1.3, Proponents' Objectives for the Project), would not be met. The cumulative effects of the No Action Alternative are found Chapter 4 and summarized in Section 2.9.

2.4 ROUTE ACTION ALTERNATIVES

The Proponents state that their overall Project approach for the Proposed Route was to follow the WWE corridor, other designated corridors, or existing utility ROWs where feasible (IPC and RMP 2008, 2009). Therefore, many of the Route Alternatives were developed to consider various ways of following these existing corridors. In addition to alternatives suggested because they more closely follow the WWE corridor or existing utility corridors, several other alternatives were proposed and considered feasible (e.g., routes that would avoid certain sensitive resources), and therefore are also considered in detail in this EIS.

Several alternatives were considered but were eliminated from further consideration because, upon closer examination, it became clear that they provided no environmental benefit over the Proposed Action or one of the other alternatives considered in detail, and/or they were not feasible for environmental, physical, or economic reasons, and/or they did not meet the purpose and need. Site-specific alternatives considered and eliminated are shown on maps in Appendix O. Each of these Route Alternatives is described in Section 2.4.12 of this EIS.

The naming convention and map labeling style used in this EIS for alternatives is to identify the Proposed Route for each segment in red type in Table 2.4-1 and in red on the maps in Appendix A, and alternatives studied in detail with green type in the table and green color on the maps and to label them with the segment number and a letter

(e.g., 2A). In all cases, reference points (e.g., 2h, 2g, 2i) were established in text, tables, and maps to aid in identifying proposed and alternative route locations. BLM and cooperating agency preferred alternatives are discussed in Section 2.4.1.

The reason for proposing the alternatives considered in detail is explained in each description. These alternatives could replace portions of the segments they are named after in the Proposed Route (e.g., Alternative 7A could replace a portion of the Proposed Route along Segment 7 if this alternative is selected). In the analysis, the alternatives are compared with the Proposed Route based on the same beginning and ending points. The portion of the Proposed Route segment they could replace is identified by reference point, so all the Route Alternatives can be compared equally. Not all of the Proposed Route segments had alternatives that were considered in detail.

Because the Project connects a series of three proposed and nine existing substations, it is described by segment and numbered sequentially between substations. The exception is between Segments 2 and 3 where the formerly proposed Creston Substation was eliminated. The reference points are illustrated in Appendix A, Figures A-2 through A-12 by segment.

Table 2.4-1. Summary of Proposed Route and Route Alternatives Considered

Figure[1/]	Route	Map Reference Points	Draft EIS Status	Final EIS Status	Comments
Segment 1 W – Windstar to Aeolus					
A-2	Segment 1W(a) - Proposed	1, 1a, 1b,1c, 1d, 1e, 2	Proposed	Proposed	Shifted to old Alt 1E-A alignment (1, 1a) and Seg 1E alignment (1a, 1b); adjusted to avoid landing strip and modify approach into Aeolus Substation (2)
	Segment 1W(c) - Proposed	1x, 1a, 1b, 1c, 1e, 1y, 2	Proposed	Proposed	Addition of tie-in to Shirley Basin substation requires reconstruction of existing line on south side of loop (1e, 1y); modified approach into Aeolus Substation (2)
	Alternative 1W(a)-A	1, 1a	Feasible Alternative	NA	Alternative dropped from further consideration, Proposed Route shifted to old Alt 1E-A alignment 1,500 feet to east
	Alternative 1W(a)-B	1, 1f, 1a	Proposed	Feasible Alternative	Former 1W(a) Proposed Route

Table 2.4-1. Summary of Proposed Route and Route Alternatives Considered (continued)

Figure[1/]	Route	Map Reference Points	Draft EIS Status	Final EIS Status	Comments
Segment 2 – Aeolus to Creston					
A-3	Segment 2 - Proposed	2, 2a, 2b, 2c, 2d, 2e, 2f, 2g, 3	Proposed	Proposed	Incorporates Alt 2C into Proposed Route alignment in Wyoming Sage Grouse Corridor (2a, 2b, 2c); incorporates design alignment to allow TWE/EGS lines and avoid Rawlins water treatment facility (2c, 2d, 2e,2f, 2g, 3)
	Alternative 2A	2b, 2,e	Feasible Alternative	Feasible Alternative	Alternative shortened in east due to elimination of previous Proposed Route alignment near Hanna
	Alternative 2B	2c, 2e	Feasible Alternative	Feasible Alternative	Alternative lengthened to the east due to Proposed Route centerline adjustments near Walcott
Segment 3 – Creston to Bridger					
A-4	Segment 3 - Proposed	3, 3a, 4	Proposed	Proposed	Modified approach into Anticline Substation (3a, 4)
	Segment 3A - Proposed	3b, 3c, 4	Proposed	Proposed	Modified approach into Anticline Substation (3c, 4)
A-5, A-6	Segment 4 - Proposed	4, 4a, 4b, 4c, 4d, 4e, 4f, 4h, 4i, 5	Proposed	Proposed	Incorporates Alt 4A into Proposed Route (4a, 4b, 4c, 4d, 4e); design centerline adjustments across Bear River Valley, Cache NF and Thatcher areas; includes landowner adjustment near Downey, ID (4i, 5); former Proposed Route eliminated (4b, 4e) at request of Proponents

Table 2.4-1. Summary of Proposed Route and Route Alternatives Considered (continued)

Figure[1/]	Route	Map Reference Points	Draft EIS Status	Final EIS Status	Comments
Segment 4 – Bridger to Populus					
A-5, A-6	Alternative 4A	4a, 4b, 4c, 4d, 4e	Feasible Alternative	NA	Alternative incorporated into Proposed Route
	Alternative 4B	4a, 4j, 4l, 4m, 4o, 4e	Feasible Alternative	Feasible Alternative	
	Alternative 4C	4a, 4j, 4l, 4m, 4n, 4o, 4e	Feasible Alternative	Feasible Alternative	
	Alternative 4D	4a, 4j, 4k, 4l, 4m, 4o, 4e	Feasible Alternative	Feasible Alternative	
	Alternative 4E	4a, 4j, 4k, 4l, 4m, 4n, 4o, 4e	Feasible Alternative	Feasible Alternative	
	Alternative 4F	4a, 4b, 4c, 4p, 4d, 4e	Feasible Alternative	Feasible Alternative	
	Alternative 4G	4f, 4g, 4h	NA	Feasible Alternative	Added at request of Caribou-Targhee National Forest to avoid steep terrain along Proposed Route (4f, 4h)
Segment 5 – Populus to Borah					
A-7	Segment 5 - Proposed	5, 5a, 5b, 5c, 5d, 5e, 5f, 6	Proposed	Proposed	Incorporates alignment change in Hawkins Basin area (5a, 5b, 5c); adjusted to avoid springs and recreation areas along East Fork Rock Creek (5d)
	Alternative 5A	5b, 5g, 5i, 5d	Feasible Alternative	Feasible Alternative	
	Alternative 5B	5b, 5g, 5h, 5i, 5d	Feasible Alternative	Feasible Alternative	
	Alternative 5C	5c, 5e	Feasible Alternative	Feasible Alternative	
	Alternative 5D	5d, 5j, 6	Feasible Alternative	Feasible Alternative	Adjusted to avoid springs and recreation areas along East Fork Rock Creek (5d, 5j)
	Alternative 5E	5e, 6	Feasible Alternative	Feasible Alternative	
Segment 6 – Borah to Midpoint					
A-8	Segment 6 - Proposed	6, 8	Proposed	Proposed	

Table 2.4-1. Summary of Proposed Route and Route Alternatives Considered (continued)

Figure[1/]	Route	Map Reference Points	Draft EIS Status	Final EIS Status	Comments
Segment 7 – Populus to Cedar Hill					
A-9	Segment 7 - Proposed	5, 7a, 5b, 5c, 7b, 7c, 7d, 7e, 7f, 7g, 7h, 7i, 7j, 7k, 7l, 9	Proposed	Proposed	Incorporates alignment change in Hawkins Basin area (7a, 5b, 5c); landowner adjustment west of Rockland (7b, 7c, 7d)
	Alternative 7A	7a, 5g, 7n, 7c	Feasible Alternative	Feasible Alternative	
	Alternative 7B	7a, 5g, 5h, 7n, 7c	Feasible Alternative	Feasible Alternative	
	Alternative 7C	7d, 7o, 7e	Feasible Alternative	Feasible Alternative	
	Alternative 7D	7e, 7p, 7f, 7g	Feasible Alternative	Feasible Alternative	
	Alternative 7E	7h, 7q, 7i	Feasible Alternative	Feasible Alternative	
	Alternative 7F	7g, 7q, 7j	Feasible Alternative	Feasible Alternative	
	Alternative 7G	7k, 7r, 7l	Feasible Alternative	Feasible Alternative	
	Alternative 7K	5, 7a, 5g, 5h, 7s, 7l, 9	NA	Feasible Alternative	New Goose Creek alternative submitted by Cassia County
Segment 8 – Midpoint to Hemingway					
A-10	Segment 8 - Proposed	8, 8a, 8b, 8c, 8d, 8e, 8f, 8g, 8h, 8i, 11	Proposed	Proposed	Includes landowner adjustment near King Hill/Clover Creek (8a, 8b)
	Alternative 8A	8, 8j, 8c	Feasible Alternative	Feasible Alternative	
	Alternative 8B	8d, 8e, 8k, 11	Feasible Alternative	Feasible Alternative	
	Alternative 8C	8d, 8k	Feasible Alternative	Feasible Alternative	
	Alternative 8D	8f, 8l, 8g	Feasible Alternative	Feasible Alternative	
	Alternative 8E	8h, 9q, 9r, 8i	Feasible Alternative	Feasible Alternative	
Segment 9 – Cedar Hill to Hemingway					
A-11	Segment 9 - Proposed	9, 9a, 9b, 9c, 9d, 9e, 9f, 9g, 9h, 9i, 9j, 9k, 9l, 11	Proposed	Proposed	Incorporates revised crossing of Salmon Falls Creeks (9d)
	Alternative 9A	9a, 9c	Feasible Alternative	Feasible Alternative	
	Alternative 9B	9d, 9m, 9f	Feasible Alternative	Feasible Alternative	
	Alternative 9C	9d, 9m, 9e	Feasible Alternative	Feasible Alternative	

Table 2.4-1. Summary of Proposed Route and Route Alternatives Considered (continued)

Figure[1/]	Route	Map Reference Points	Draft EIS Status	Final EIS Status	Comments
A-11 (cont.)	Alternative 9D	9g, 9n, 9o, 9p, 9q, 9r, 9k	Feasible Alternative	Feasible Alternative	Includes BLM and Owyhee County adjustment across Cove NMA (9n, 9o)
	Alternative 9E (revised)	9g, 9s, 9i, 9j, 9t, 9l	Feasible Alternative	Feasible Alternative	Revised by BLM to avoid sage-grouse priority habitat (9s, 9i, 9j, 9t, 9l)
	Alternative 9F	9g, 9h, 9o, 9p, 9q, 9r, 9k	Feasible Alternative	Feasible Alternative	
	Alternative 9G	9g, 9n, 9o, 9p, 9k	Feasible Alternative	Feasible Alternative	Includes BLM and Owyhee County adjustment across Cove NMA (9n, 9o)
	Alternative 9H	9g, 9h, 9o, 9p, 9k	Feasible Alternative	Feasible Alternative	
	Alternative 9I	9l, 9l.1, 9m	NA	Incorporated into Alt 9E, not separately analyzed	New Murphy subdivision alternative submitted by Owyhee County and BLM
Segment 10 – Cedar Hill to Midpoint					
A-12	Segment 10 - Proposed	8, 10a, 10b, 9	Proposed	Proposed	Includes revised Southwest Intertie Project alignment (10a, 10b)

1/ Figures A-2 through A-12 are located in Appendix A of the Final EIS.

2.4.1 Preferred Alternatives

Gateway West represents the largest and most complex proposed high-voltage transmission line in the western United States. Unlike interstate natural gas pipelines, there is no equivalent overarching federal authority empowered with siting interstate high-voltage transmission lines. Rather, approval of interstate transmission lines involves a mix of authorizations from local, state, and federal agencies. There is no impact-free route choice for a large transmission line. In some segments of the Project, where there are multiple resource conflicts, alternative routes often show dramatically different impacts on certain resources, and some alternatives were put forward to emphasize protection of one resource or land value over another. There are substantial segments of the public that have expressed opposing opinions on the issues and alternatives analyzed in the Draft EIS.

Siting preference on public versus private lands is a top issue in some Project segments. BLM coordinated with federal, state, and local government cooperating agencies to identify reasonable alternatives that would result in complementary siting decisions by all authorizing entities. In some cases, consensus could not be achieved and the state or county preferred alternative differs from that of the BLM's. The BLM will only make a decision on siting of the transmission line on federal lands that it manages. The BLM has no authority to either permit or prohibit construction of the

Project on non-federal land. While the BLM's decision may affect private lands adjacent to or between federal areas, decisions on siting and construction requirements on non-federal lands are under the authority of state and local governments.

In Wyoming, land use permits must be obtained from counties and local governments, and a Certificate of Public Convenience and Necessity is required from the Wyoming Public Service Commission (PSC). The Project also falls under the jurisdiction of the Wyoming ISC, and a permit is required from the ISC to allow construction and operation of the Project in Wyoming. The Wyoming Board of Land Commissioners is responsible for the direction, control, leasing, and disposal of state lands. In Idaho, the IPUC regulates the siting of major transmission lines through a Certificate of Public Convenience and Necessity. Individual counties and local governments are responsible for authorizing the Project on private land. The Idaho State Department of Lands is responsible for authorizing the Project on State lands. Table 1.4-1 provides a summary of the major permits that would be required and Section 3.17.1.3 provides a description of the regulatory requirements that pertain to land use.

2.4.1.1 BLM

Department of Interior regulations (43 CFR 46.425) suggest departmental agencies should identify preferred alternatives in Draft EISs but do not require them to do so: "Unless another law prohibits the expression of a preference, the draft environmental impact statement ***should*** identify the bureau's preferred alternative or alternatives, if one or more exist." Agencies are required to identify preferred alternatives in Final EISs: "Unless another law prohibits the expression of a preference, the final environmental impact statement ***must*** identify the bureau's preferred alternative" [added emphasis]. The BLM did not identify a preferred alternative in the Draft EIS in order to maintain objectivity and seek route consensus following the Draft EIS comment period.

Table 2.4-2 shows the BLM's Preferred Alternative[2] for each segment of the Project. Where applicable, the table also shows the preferred route identified by another federal agency or a county or state government. Figures 2.4-1, 2.4-2, and Figures A-1 through A-12 in Appendix A show the BLM Preferred Alternatives in Wyoming and Idaho.

The BLM Preferred Alternatives in each segment were selected under the assumption that site-specific compliance with the NHPA is assured through following provisions of the PA, completed under the requirements of Section 106 of the Act. Site-specific compliance with the ESA is assured through following the BO and continued consultation with the USFWS under Section 7 of the Act. The BLM also assumes that site-specific compliance with Section 404 of the CWA is overseen by the USACE, coordinating with BLM field staff.

A final POD submitted by the Proponents is incorporated into the "Terms and Conditions" of BLM ROW grants and becomes a binding requirement that the Proponents must comply with. PODs contain typical construction diagrams, identify access roads and facility locations, and describe construction and reclamation practices as well as other environmental mitigation measures. In large and complex linear

[2] The terms "Preferred Alternative" and "Preferred Route" (both uppercase) will be used hereafter to refer the BLM's Preferred Route.

Table 2.4-2. Preferred Routes by Segment

Segment	Preferred Route	Agency
Segment 1W[1/]	Proposed 1W(a) and 1W(c) Routes (Figure A-2)	BLM and State of Wyoming
Segment 2	Proposed Route (Figure A-3)	BLM and State of Wyoming
Segment 3	Proposed Route, including 3A (Figure A-4)	BLM and State of Wyoming
Segment 4	Proposed Route (Figures A-5 and A-6) except within the Caribou-Targhee National Forest (NF) (see below)	BLM, State of Wyoming, and Lincoln County
	Proposed Route within the NF incorporating Alternative 4G (Figure A-6)	Forest Service
Segment 5	Proposed Route incorporating Alternatives 5B and 5E[2/] (Figure A-7)	BLM
	Proposed Route incorporating Alternatives 5C and 5E (Figure A-7)	Power County
Segment 6	The proposal to upgrade the line voltage from 345 kV to 500 kV (Figure A-8)	BLM
Segment 7	Proposed Route incorporating Alternatives 7B, 7C, 7D, and 7G (Figure A-9). The Proposed Route in the East Hills and Alternative 7G will be micro-sited to avoid Preliminary Priority Sage-grouse Habitat (PPH).	BLM
	Alternative 7K (Figure A-9)	Power and Cassia Counties
Segment 8	Proposed Route incorporating Alternative 8B (Figure A-10)	BLM and Idaho Army National Guard
Segment 9	Revised Proposed Route incorporating Alternative 9E, revised to avoid PPH and Murphy (Figure A-11)	BLM
	Alternative 9D (Figure A-11)	Owyhee County
Segment 10	Proposed Route (Figure A-12)	BLM

1/ The portion of the Segment 1W(a) and 1W(c) Proposed Route on the Medicine Bow-Routt National Forests is the Forest Service's preferred route for Segment 1W.

2/ Assumes that Western Electricity Coordinating Council reliability issues associated with 5E are resolved.

Figure 2.4-1. BLM's Preferred Alternative – Wyoming

Figure 2.4-2. BLM's Preferred Alternative – Idaho

projects, final detail is seldom available when the ROW grant is issued. The BLM may issue a ROW grant but withhold use of the granted area until final design and other environmental requirements are met. A Notice to Proceed is issued when all requirements are met (43 CFR 2805.10 (a)(2)).

The POD for Gateway West is presented in Appendix B of this Final EIS. The appendices to the POD (Appendices A through R) contain the framework, or outline, for each of the project-related topics. Depending on the status of completion, some appendices contain more detail than others. Detailed facility layout and location is currently being finalized and is not available at this time.

Segment 1W – BLM Preferred Alternative

The Proposed Route for 1W(a) is the BLM's Preferred Alternative. It parallels the existing Dave Johnston to Freezeout 230-kV line. This portion of the Preferred Alternative runs within a designated utility corridor and complies with the State of Wyoming sage-grouse core area directive. This is also the State of Wyoming's preferred alternative, as documented in the Draft EIS.

The Proposed Route for 1W(c) is the BLM's Preferred Alternative. A portion of the Dave Johnston and Freezeout 230-kV line would be rebuilt with steel H-frame structures and would tie into both the Heward Substation and the Shirley Basin Substation. This portion of the Preferred Alternative minimizes impacts by using an existing ROW. This is also the State of Wyoming's preferred alternative, as documented in the Draft EIS.

The BLM selected the Proposed Routes for 1W(a) and 1W(c) as its Preferred Routes because:

- They are consistent with the Wyoming Governor's Sage-grouse EO.
- They are primarily located in designated corridors on public land or parallel existing linear infrastructure for more than 90 percent of their length.
- They are consistent with the State of Wyoming's preferred routes.
- Route 1W(c) consists of rebuilding an existing transmission line and largely limits surface disturbance to the corridor containing the existing line.
- Route 1W(a) parallels an existing transmission line (Route 1W[c]).
- The BLM did not identify a preference between Alternative 1W(a)-B and the comparative portion of the Proposed Route for 1W(a) because neither portion would cross public lands.

(Note: In the area approximately 5 miles north and 5 miles south of Ice Cave Mountain, both portions of the BLM's Preferred Alternative shift east to avoid the ice cave. Segment 1W(a) becomes the reconstruction of the existing line and 1W(c) becomes the new line.)

Segment 2 – BLM Preferred Alternative

The Proposed Route for Segment 2 is the BLM's Preferred Alternative. It complies with the State of Wyoming sage-grouse core area directive. This alternative is also the State of Wyoming's preferred alternative, as documented in the Draft EIS.

The BLM selected the Proposed Route in Segment 2 as its Preferred Route because:

- The Proponents modified their Proposed Route, after reviewing Draft EIS comments, to be consistent with the Wyoming Governor's Sage-grouse EO.
- Approximately 50 percent of the route is located in designated corridors on public land or is parallel to existing linear infrastructure. A route following the WWE corridor in the eastern portion of this segment could not be selected because it would not have been consistent with the Wyoming Governor's Sage-grouse EO.
- The Proposed Route avoids the Fort Fred Steele State Historic Site and the community of Fort Steele. The designated corridors in the vicinity of the fort (Alternatives 2A and 2B) do not avoid the historic site or the community.
- It is consistent with the State of Wyoming's preferred route.
- The Proposed Route crosses the North Platte River just south of I-80, along with other linear infrastructure that follows this important transportation corridor and avoids bald eagle nests north and south of the interstate highway.

Segment 3 and 3A – BLM Preferred Alternative

The Proposed Route for Segments 3 and 3A is the BLM's Preferred Alternative. No alternative routes were considered in detail for this segment. The route generally follows Interstate 80 and an existing utility corridor. Full use of the existing corridor is not possible because of constraints presented by existing development associated with roads, railroads, mining, and oil and gas operations. This is also the State of Wyoming's preferred alternative, as documented in the Draft EIS.

Segment 4 – BLM Preferred Alternative

The Proposed Route for Segment 4 (except within the Caribou-Targhee NF) is the BLM's Preferred Alternative. The Preferred Alternative generally follows an established utility corridor on BLM-managed lands and complies with the State of Wyoming sage-grouse core area directive. The Wyoming portion of this route is also the State of Wyoming's preferred alternative, as documented in the Draft EIS.

The BLM selected the Proposed Route in Segment 4 as its Preferred Route because:

- It follows the existing 345-kV transmission lines from the Jim Bridger Power Plant for approximately 75 percent of the length of the segment. The proposed alignment deviates from these existing transmission lines 1) to avoid crossing the Seedskadee NWR; 2) to provide a better crossing of U.S. Highway (US) 30 / State Route (SR) 89 and the Bear River near Cokeville, Wyoming, and minimize wetland impacts; 3) to avoid occupied dwellings in the Bear Lake Valley, southeast of Montpelier, Idaho; 4) to avoid unstable soils and steep terrain in the Caribou-Targhee NF; and 5) to avoid steep terrain, sage-grouse leks, structures/residences, and pivot irrigated fields east to the Populus Substation in Bannock County, Idaho. Thus, construction and visual impacts of new transmission alignments are avoided by following existing transmission lines except in the five special situations noted above.
- Avoiding the Seedskadee NWR requires crossing the Green River where the proposed transmission line would not be in conformance with the visual resource

management objective at this location. A land use plan amendment for the Green River RMP is proposed to address the visual management nonconformance.

- Land use plan amendments are also proposed for the Kemmerer RMP to address nonconformance with visual resource, historic trail and associated historic landscape, and Special Management Area (SMA) management objectives. Selecting alternative routes in Segment 4 would 1) place the proposed transmission route out of compliance with the Wyoming Governor's sage-grouse EO; 2) result in impacts to sage-grouse habitat, inconsistent with the species continued recovery; 3) result in significant new disturbance; and 4) result in significantly longer and more costly routes for the Proponents to build, operate, and maintain.
- It is consistent with the preferred routes of the State of Wyoming and local government.

Alternatives 4B through 4E are generally consistent with the Kemmerer RMP's management objectives; however, 1) they are not consistent with the Wyoming Governor's sage-grouse EO; 2) they cross the Cokeville Meadows NWR Acquisition Area; 3) Alternatives 4B and 4C are in view from Fossil Butte National Monument; 4) they cross almost 50 percent more streams, and 5) they encounter approximately 30 percent more acres of unstable soils.

Alternative 4F was designed to avoid cultural resource impacts; however, it does not offer a significant reduction in impacts to these resources from the comparable portion of the Proposed Route. It does not conform to the Wyoming Governor's sage-grouse EO.

In Idaho, just past the Wyoming border, the Proposed Route crossed approximately 4 miles of sage-grouse Preliminary Priority Habitat (PPH). However, this habitat is already crossed by three high-voltage transmission lines and full mitigation of disturbed sage brush habitat on public lands will be required.

Segment 5 – BLM Preferred Alternative

The BLM's Preferred Alternative for Segment 5 was announced in August 2012 and followed the Segment 5 Proposed Route northwest from the Populus Substation and then deviated from the Proposed Route following Alternative 5C and then Alternative 5E (if the WECC reliability issues are resolved) to the Borah Substation. The BLM's Preferred Alternative reduced impacts to visual resources on federal lands and avoided crossing the Deep Creek Mountains. The BLM's Preferred Alternative for Segment 5 was also Power County's preferred alternative.

The BLM confirmed its preferred route for Segment 5 following government-to-government consultation with the Shoshone-Bannock Tribes. However, in October 2012, the Tribes notified the BLM that they no longer wished the alignment crossing the Fort Hall Indian Reservation to be considered for the Project. The BLM lacks the authority to grant a ROW on tribal lands or any lands other than those prescribed by law. Federal law (25 U.S.C. §324) provides: "No grant of a right-of-way over and across any lands belonging to a tribe organized under the Act of June 18, 1934 (48 Stat. 984) [25 USCS § § 461 et seq.], as amended; the Act of May 1, 1936 (49 Stat. 1350); or the

Act of June 26, 1936 (49 Stat. 1967) [25 USCS § § 501 et seq.], shall be made without the consent of the proper tribal officials." The Fort Hall Reservation was organized under the Indian Reorganization Act of June 18, 1934.

Following the Fort Hall Business Council's decision not to permit the Project to be built across the Reservation, the BLM reviewed the remaining route choices analyzed in the Draft EIS, all of which potentially impacted BLM-managed lands, and selected the Proposed Route across federal land incorporating Alternatives 5B and 5E as its Preferred Route for Segment 5.

Although approximately 18 miles longer than the Proposed Route, Alternative 5B:

- Is consistent with the Pocatello RMP;
- Avoids VRM Class II areas in the Deep Creek Mountains, a scenic area of undisturbed public land;
- Avoids high-quality forested habitats and recreation use areas in the northern portion of the Deep Creek Mountains;
- Requires the least amount of road construction because of the use of existing roads; and
- Would parallel the BLM's Preferred Route for Segment 7, requiring only one access road system for both segments in this area.

Alternative 5B crosses approximately one mile of sage-grouse PPH on the east side of the southern Rockland Valley. This habitat was ranked as lower value habitat in the Landscape Importance Model. Full mitigation of disturbed sagebrush habitat on public lands will be required.

Alternative 5B would cross approximately 19 more miles of private land and consequently be nearer to residences and dryland farming operations than the comparable portion of the Proposed Route. However, the BLM Preferred Route represents the alignment with the least overall impacts to public land values. In Idaho, transmission line approval on non-federal lands rests with county governments. The BLM has no position on the final location for the portion of Alternative 5B in the Rockland Valley. Alternative 5B was selected because it minimizes impacts to public land resources in the Deep Creek Mountains. The final transmission line alignment across private land in the Rockland Valley (or any stretches of private land) should be determined by the local government (Power County), private land owners, and the Proponents, following state law and local procedures. If invited, the BLM would participate in final siting discussions for this area.

The BLM also supports Alternative 5E as part of its preferred alternative so long as WECC reliability issues are resolved.

Segment 6 – BLM Preferred Alternative

The BLM's Preferred Alternative for Segment 6 is the upgrade of an existing 345-kV transmission line. No alternative routes were considered for this segment.

Segment 7 – BLM Preferred Alternative

The BLM's Preferred Alternative for Segment 7 follows the Proposed Route out of the Populus Substation for approximately 10 miles, then follows Alternative 7B until that route rejoins the Proposed Route. The Preferred Alternative generally follows the Proposed Route from there to the Cedar Hill Substation but diverges to follow Alternatives 7C, 7D, and 7G. The Proposed Route in the East Hills and the Alternative 7G portion would be microsited to avoid BLM-identified sage-grouse PPH. The BLM's Preferred Alternative for Segment 7 minimizes visual impacts, avoids the National Historic Trails site called "The Parting of the Ways," and avoids BLM-identified PPH.

The BLM selected the Proposed Route as modified by Alternatives 7B, 7C, 7D, and 7G as its Preferred Route because the alignment:

- Avoids sage-grouse PPH on public lands; and
- Avoids impacts to other significant public land resources, as noted below.

Alternative 7B was selected for the same reasons that Alternative 5B was identified as the BLM Preferred Route.

Leaving public lands on the west side of the Deep Creek Mountains, Alternative 7B diagonally crosses the Rockland Valley entirely on private land. It joins the Proposed Route approximately 5 miles west of Rockland, Idaho. In Idaho, transmission line approval on non-federal lands rests with county governments. The BLM has no position on the final location for the portion of Alternative 7B in the Rockland Valley. Alternative 7B was selected because it minimizes impacts to public land resources in the Deep Creek Mountains. The final transmission line alignment across private land in the Rockland Valley (or any stretches of private land) should be determined by the local government (Power County), private landowners, and the Proponents, following state law and local procedures. If invited, the BLM would participate in final siting discussions for this area.

The BLM selected Alternative 7C rather than the Proposed Route because it avoids the Parting of the Ways, an important landmark on the California and Oregon National Historic Trail (NHT), and has a lesser impact to sagebrush habitat.

Alternative 7D is a short (6.8-mile) variation from the Proposed Route to avoid the California and Oregon NHTs. Micrositing, south of Alternative 7D, through the East Hills would avoid sage-grouse PPH, irrigated farm lands, a hang gliding site, and a landing strip.

Leaving the East Hills, the Proposed Route crosses approximately 25 miles of private land in the Magic Valley of Cassia County. The BLM has no position on the final alignment for this portion of Segment 7. If invited, the BLM would participate with the local government (Cassia County), private landowners, and the Proponents in final siting discussion for this area.

Alternative 7G was selected over the Proposed Route to avoid a BLM motorized vehicle winter closure area.

Alternative 7K is a revised and shortened version of Alternative 7I. It is the preferred route of Cassia and Power Counties. The BLM worked with landowners; local, state,

and federal agencies; and the Proponents to finalize Alternative 7K. The BLM acknowledges that it is a better route than the 7I alignment. Alternative 7K is shorter and would cross less sage-grouse PPH than Alternative 7I. However, because this route would still cross significant amounts of PPH, be in close proximity to important California NHT features such as the City of Rocks National Reserve and Granite Pass, and be approximately 35 miles longer than the BLM Preferred Route, the BLM was unable to select Alternative 7K as its preferred route.

Segment 8 – BLM Preferred Alternative

The BLM's Preferred Alternative follows the Proposed Route for Segment 8 for approximately 92 miles and then follows Alternative 8B to the Hemingway Substation. The Preferred Alternative generally avoids crossing the SRBOP and the IDANG OCTC.

The BLM selected the Proposed Route and Alternative 8B as its Preferred Route because this alignment:

- Follows designated corridors and existing linear infrastructure for approximately 76 percent of its length;
- Generally avoids the SRBOP (crossing a 2-mile portion of it within an approved utility corridor), and it is likely the enhancement requirements of the SRBOP enabling legislation that created the National Conservation Area (P.L. 103-64, Sec. 1(5), 3(a)(2), and 4(a)(2)) can be met in this area;
- Avoids the IDANG OCTC; and
- Avoids a National Register Historic District.

Although Alternative 8B is located on or near irrigated agricultural lands and city limits, the BLM determined that the Proposed Route, located in the SRBOP, does not currently meet the enhancement requirement in the enabling legislation and was therefore unable to select this alignment as its Preferred Route.

Other alternatives located in the SRBOP (8D and 8E) also do not currently meet the enhancement requirement of P.L. 103-64 and therefore could not be selected as the BLM's Preferred Route. Alternatives 8D and 8E would cause impacts to the values for which the SRBOP was designated, especially raptor populations and habitats, because currently offered mitigation does not effectively offset the impacts of disturbance and fragmentation of raptor prey base habitat.

A short segment of the Proposed Route, east of Mountain Home, Idaho, is located in the SRBOP boundary. However, it is in a designated corridor and it is consistent with the SRBOP land use plan and the intent of P.L. 103-64, because it is in a developed area near several other power lines and I-84 on the fringe of the SRBOP. It is likely that the impacts on the SRBOP in this area can be mitigated to meet the enhancement criteria of the enabling legislation.

The BLM Preferred Route for Segment 8 is not located in sage-grouse PPH.

Segment 9 – BLM Preferred Alternative

The BLM's Preferred Alternative for Segment 9 follows the Proposed Route to approximately MP 96 and then follows the revised Alternative 9E. The Preferred Alternative avoids crossing the SRBOP, PPH, and private lands near Murphy.

The BLM selected the Proposed Route and Alternative 9E (revised) as its Preferred Route because this alignment:

- Avoids crossing the wilderness study area (WSA) and other designations associated with Salmon Falls Creek at Lilly Grade. This crossing of Salmon Falls Creek is eligible for WSR designation based on recreation criteria; however, such a crossing is permissible under current regulations;
- Avoids Balanced Rock County Park and irrigated farm lands on the east side of Salmon Falls Creek;
- Avoids military operating areas South of the Saylor Creek Training Area;
- Follows a pinchpoint between the Saylor Creek Training Area and Bruneau Dunes State Park. A total of 8.8 miles of the alignment through this pinchpoint is unavoidably located on public land in the SRBOP. However, 6.7 miles of that alignment is in a designated corridor on public lands within the SRBOP. It is likely that the impacts on the SRBOP in this area can be mitigated to meet the enhancement criteria of the enabling legislation. Alternative 9E does deviate a distance of 2.2 miles outside of this corridor to avoid private lands just west of the SRBOP boundary. A proposed land use plan amendment would allow this portion of the alignments outside of the designated corridor;
- Avoids the SRBOP, except where it is located in the above the pinchpoint and for 2.5 miles between Oreana and Murphy, Idaho, to avoid sage-grouse PPH. A total of 1.5 miles of the 2.5 miles in the SRBOP between Oreana and Murphy is located in a designated corridor on public land, and it is likely that the impacts on the SRBOP in this area can be mitigated to meet the enhancement criteria of the enabling legislation. A proposed land use plan amendment would allow this portion of the alignment outside of the designated corridor; and
- Is not located in sage-grouse PPH.

The proposed mitigation for the other alternatives located in the SRBOP (9D, 9G, 9F, and 9H) does not currently meet the enhancement requirement in the enabling legislation and therefore the BLM could not select any of these alternatives as the preferred route. Alternatives 9D, 9G, 9F, and 9H would still have residual impacts after mitigation and therefore not enhance the values for which the SRBOP was designated, especially raptor populations and habitats due to collisions and fragmentation, and because currently offered mitigation does not offset the impacts of the disturbance and fragmentation of raptor prey base habitat. Impacts from the BLM's Preferred Alternative, to the extent that it crosses the SRBOP, can likely be mitigated to meet the enhancement criteria of the enabling legislation.

Although the portion of the Proposed Route in Owyhee County generally follows designated corridors on public land, Alternative 9E was selected as the BLM's Preferred Alternative because approximately 94 percent of its length is on public land as opposed to only 68 percent of the Proposed Route. Alternative 9E crosses only 1.2 miles of private land.

Segment 10 – BLM Preferred Alternative

The BLM's Preferred Alternative for Segment 10 follows the Proposed Route. No route alternatives were considered in detail for this segment. The Preferred Alternative for Segment 10 coincides with the proposed SWIP alignment.

2.4.1.2 Forest Service Preferred Route

Segment 1 – Forest Service Preferred Alternative

The Forest Service's preferred alternative for Segments 1W(a) and 1W(c) is the Proposed Route.

Segment 4 – Forest Service Preferred Alternative

The Forest Service's preferred alternative within the Caribou-Targhee NF is the Proposed Route for Segment 4 incorporating Alternative 4G.

2.4.1.3 State of Wyoming Preferred Alternatives

As a cooperating agency, the State of Wyoming has reviewed all of the alternatives incorporated into this EIS and evaluated each based on consistency with state rules, regulations, and policies and on the impacts to natural resources unique to each alternative. Of particular concern for this project, the State determined consistency of each the alternatives with EO 2011-5, which outlines protection of sage-grouse core areas within the state. That EO allows the authorization and implementation of new development in sage-grouse core areas only when it can be demonstrated by state agencies (in this case primarily the Industrial Siting Council and Public Service Commission) that the activity will not cause declines in sage-grouse populations. The EO outlines two primary criteria for determining consistency of new transmission lines with core area protection. First, new transmission development will be considered consistent with the EO if construction of the new transmission occurs within 0.5 mile of either side of existing 115-kV or greater transmission lines in the core area. Second, in response to numerous interstate transmission proposals and a desire to reduce the impacts of high-voltage transmission across the southern portion of the state, the EO establishes a 2-mile-wide corridor through the Sage, Seedskadee, Greater South Pass, and Hanna Core Areas. New transmission constructed in the 2-mile-wide corridor through these core areas will be considered consistent with the EO. Any new transmission (including collector) lines constructed in core areas within the state that cannot meet one of these criteria will be considered inconsistent with the EO unless the applicant can demonstrate to appropriate state agencies that construction will not cause declines in sage-grouse populations. The state currently lacks scientifically valid information to conclude that construction outside of the corridors described above would not result in declines in sage-grouse populations.

Segment 1

The State of Wyoming's preferred alternatives for Segment 1W are to construct adjacent (within 0.5 mile) to the existing (to be reconstructed) Dave Johnston – Aeolus segment (1W[c]) of the Dave Johnston – Rock Springs 230-kV line. Therefore, the State of Wyoming preferred alternative for Segment 1W is the Proposed Route (see Appendix A, Figure A-2). The state's preferred alternative for this segment is consistent with EO 2011-5 because both the new transmission line and the reconstruction of the

existing line (1W[a] and 1W[c]) could be constructed within 0.5 mile of an existing transmission line through sage-grouse core area.

Alternative 1W(a)-B would be inconsistent with EO 2011-5.

Segment 2

The Proposed Route for Segment 2 (revised to incorporate Alternative 2C as analyzed in the Draft EIS) is also the State's preferred alternative and is consistent with EO 2011-5.

Alternative 2B and the western portion of Alternative 2A would result in significant adverse impacts to the community and residents of Fort Steele, Wyoming, as well as to Fort Fred Steele State Historic site. The Proposed Route in the vicinity of Fort Steele avoids these impacts.

Segment 3

Segment 3 does not cross any sage-grouse core area and the State agrees with the Proposed Route for this segment.

Segment 4

The Proposed Route for Segment 4 (revised to incorporate Alternative 4A as analyzed in the Draft EIS) is also the State's preferred alternative. This alternative follows three existing 345-kV transmission lines between the Jim Bridger Power Plant and Cokeville, Wyoming. EO 2011-5 establishes a 2-mile-wide corridor through the Sage and Seedskadee Core Areas centered on the three existing transmission lines. For most resources, constructing this segment adjacent to the existing transmission lines would significantly reduce impacts.

This alternative may, however, result in higher impacts to historic trails and therefore mitigation should be developed, with input from the SHPO, to adequately mitigate impacts to the trails.

Alternative 4F departs from the existing transmission line corridor and impacts to most natural resources are expected to be higher compared to construction adjacent to the existing transmission. Similarly, alternatives south of Diamondville and Kemmerer would cross the Seedskadee and Sage Core Areas outside the corridors designated by the EO. The impacts to nearly all natural resources along the southern alternatives would be higher compared to constructing Alternative 4A along the existing transmission line corridor.

2.4.1.4 Sweetwater County Preferred Alternatives

Sweetwater County, a cooperating agency, identified the Proposed Route in Segments 2 and 3, and Alternative 4A (the Revised Proposed Route in Segment 4 in the Final EIS) as their preferred alternative in their Draft EIS comment letter (letter 100243, see Appendix L).

2.4.1.5 Lincoln County Preferred Alternative

Lincoln County, a cooperating agency, identified the Revised Proposed Route in Segment 4 as their preferred alternative in their Draft EIS comment letter (letter 100501, see Appendix L).

2.4.1.6 Power County Preferred Alternatives

Power County, a cooperating agency, passed ordinance No. 2010-03 on November 23, 2009, designating two alternatives as preferred for those portions of Segments 5 and 7 in Power County (Power County 2009a). The County states that the Proposed Route would have extremely detrimental impacts on the health, safety, welfare, and economic viability of the County, particularly irrigated agriculture and future economic development within the County.

Segment 5

Power County's preferred alternative follows Alternatives 5C and 5E (see Appendix A, Figure A-7). Alternative 5C (5g, 5l) follows the existing transmission corridor across the Fort Hall Indian Reservation. Alternative 5E follows an existing transmission corridor across the Snake River to a termination at the Borah Substation.

Segment 7

Power County's preferred alternative is that portion of Alternative 7K that would originate at point 5 and extend to the county line.

2.4.1.7 Cassia County Preferred Alternatives

Cassia County is a cooperating agency. Commissioners designated county entry and exit points for Segment 7 at an August 24, 2009, meeting attended by representatives of Cassia, Twin Falls, Power, Oneida, and Bannock Counties in Idaho and Box Elder County in Utah (Cassia County 2009).

Segment 7

Cassia County's preferred alternative is that portion of Alternative 7K in Cassia County (see Appendix A, Figure A-9). The preferred alternative would originate at the Power-Cassia County line at MP 52 and extend through point 7s, where it would turn northwest and north until reaching the Cedar Hill Substation.

2.4.1.8 Twin Falls County Preferred Alternatives

Twin Falls County, a cooperating agency, supports Alternative 7K and Proposed Route 9 as the preferred routes (Figures A-9 and A-11).

2.4.1.9 Owyhee County Preferred Alternatives

Owyhee County identified two preferred alternatives to the Proposed Route in Segment 9 by letter dated September 1, 2009 (Owyhee County 2009). Of these routes, the Northern Route (9D) is strongly preferred and the Southern Route (9E) is considered as only a marginal improvement over the Proposed Route. The County states that the Proposed Route would have significant detrimental effect on the County's landowners, farmers, economy, future development, and tax base.

Segment 9

Owyhee County's preferred northern alternative corresponds to Alternative 9D (see Appendix A, Figure A-11). It would originate at point 9n northwest of the Saylor Creek Air Force Range, cross Snake River, traverse the SRBOP through point 9r, and intersect back with the Proposed Route north of the town of Murphy at point 9p.

2.4.1.10 Idaho Army National Guard Preferred Alternatives

IDANG became a cooperating agency in April 2011. IDANG has a federal mission to provide trained units available for active duty in time of war or national emergency. The OCTC, which is on BLM-managed land within the SRBOP, is an important training area used by IDANG.

Segment 8

IDANG believes Segment 8 of the Proposed Route could adversely affect ground maneuver and aerial combat training operations within the OCTC. It could adversely affect approximately 3,500 acres of lands in the northern portion of the OCTC by limiting or restricting training near tower and line safety buffers. IDANG also believes Proposed Route could negatively affect cultural sites and known populations of slickspot peppergrass (*Lepidium papilliferum*), a federal candidate species.

In May 2011, IDANG recommended that a route that avoids adversely affecting the training area be selected. Their preferred route would remain well north of the existing 500-kV transmission line from a point east of the OCTC to a point west of the area. Alternative 8B, BLM's Preferred Alternative for Segment 8, would meet that objective.

2.4.2 Segment 1W – Windstar to Aeolus

2.4.2.1 General Description and Issues

Segment 1W is composed of Segments 1W(a) and 1W(c). Both consist of single-circuit 230-kV transmission lines. Generally, Segment 1W(a) would be a new transmission line and 1W(c) would involve reconstruction of a portion of the existing Dave Johnston – Rock Springs 230-kV transmission line. However, in the area approximately 5 miles north and 5 miles south of Ice Cave Mountain, both alignments shift east to avoid the ice cave; Segment 1W(a) would become the reconstruction of the existing line and 1W(c) would be the new line. Reconstruction of the existing transmission line is necessary to increase the load-carrying capacity of this existing line. The existing single conductor per phase would be replaced with two larger conductors per phase, requiring the replacement of all of the existing wood structures with stronger steel-pole, H-frame structures, similar in height and appearance to the existing line. In addition, 21 transmission structures would be removed where the new line deviates for the old route (3 in Section 3, Township 23 North, Range 80 East; 9 in Sections 26, 34, and 35, Township 24 North, Range 80 East; 4 in Sections 10 and 15, Township 29 North, Range 78 East; and 5 in Sections 29 and 32, Township 31 North, Range 77 East). Each single-circuit line would be constructed in a separate ROW to meet reliability criteria. The 230-kV lines would be carried on steel H-frame structures between 60 and 90 feet tall (Appendix B, Figure B-1). Appendix A, Figure A-2 shows the location of the Segment 1W routes. Segment 1W(a) would carry the fiber optic communication system for Segment 1. Because of its length, an optical signal regeneration site is required approximately midway along its route. The final location of the regeneration station would be determined after final design is completed.

The primary objective during routing of Segment 1W was to follow the existing utility corridor, the WWE corridor, and other designated utility corridors. The proposed 1W(a) and 1W(c) routes are within or parallel to the WWE corridor (on federally managed land) or the projected corridor (on non-federally managed land) for a combined 125.4 miles of

the total 147.4-mile route length. Among the key factors considered in routing this segment were the existing transmission line, wildlife resources (sage-grouse, big game winter range, and raptors), cultural resources, historic trails, and wetlands.

2.4.2.2 Proposed Route 1W(a) (1, 1a, 1b, 1c, 1d, 1e, 2)

The Proposed Route 1W(a) extends in a southerly direction approximately 73.8 miles from the existing Windstar Substation to the proposed Aeolus Substation. The Proposed Route crosses the Burlington Northern Railroad, North Platte River, US 87/20, and the Chicago and Northwestern Railroad. At MP 3.5, the route crosses Interstate 25 (I-25) between two existing subdivisions approximately one mile southeast of the town of Glenrock. At MP 4.0, along the east side of Deer Creek and the Glenrock oil field, the line begins to parallel 1,500 feet to the west of Segment 1W(c), except as noted in Section 2.4.2.1 above, to the Aeolus Substation (see Section 2.4.2.3 below for description). The 1W(a) route generally maintains a minimum of separation of 1,500 feet from the 1W(c) route to meet reliability criteria (as discussed in Chapter 1); however, the two lines would be as close as 530 feet in places between MPs 24 and 30 due to topography.

2.4.2.3 Proposed Route 1W(c) (1x, 1a, 1b, 1c, 1d, 1e, 1y, 2)

Except as noted in Section 2.4.2.1, the Proposed Route 1W(c) is a rebuild of an existing 230-kV line from the existing Dave Johnston Power Plant to the proposed Aeolus Substation. The route leaves the existing substation at the Dave Johnston Power Plant and proceeds west for approximately 2 miles and then turns south toward the proposed Aeolus Substation, a distance of approximately 73.6 miles. The Proposed Route crosses the North Platte River, the Burlington Northern Railroad, US 87/20, and I-25. Near MP 2.0, the route crosses an existing subdivision along an existing ROW, then turns south, joining Segment 1W(a) at MP 3.0. Both routes cross agricultural lands and the Glenrock oil field to the east of Deer Creek, eventually crossing the creek near MP 14.7 and continuing south to Banner Mountain.

From Banner Mountain, Proposed Routes 1W(a) and 1W(c) proceed south, crossing into Natrona County at approximately MP 21.0. After crossing the county line, the two Proposed Routes cross the West Fork of Duck Creek, the Deer Creek Range, and the western edge of the Medicine Bow-Routt NFs. They then continue generally south, passing east of Ice Cave Mountain (see Section 2.4.2.1 above) and Bates Creek Reservoir before crossing into Carbon County. At MP 44.3, Proposed Route 1W(c) enters and then exits the proposed Heward Substation adjacent to the existing Difficulty Substation. Both Proposed Routes then parallel to the east and west of SR 487 for about 14 miles across Shirley Basin. Between MP 50.5 and MP 56.5, the two Proposed Routes diverge to a maximum separation of 8,000 feet, as Proposed Route 1W(c) follows the existing Dave Johnston – Rock Springs line and Proposed Route 1W(a) continues to parallel the west side of SR 487. At MP 55.8, Proposed Route 1W(c) ties into existing transmission lines looping into and out of the existing Shirley Basin Substation to the east before continuing south, again parallel to Proposed Route 1W(a). At MP 58.0, both Proposed Routes turn southwest through Little Basin to the northwest of the Freezeout Mountains. At MP 64.0, the Proposed Routes again diverge to a maximum separation of approximately 7,500 feet as Proposed Route 1W(a) swings west to minimize impacts to a private landing strip in Red Draw near Difficulty Creek.

Both Proposed Routes cross the southern toe of the Freezeout Mountains near MP 68.0 before terminating at the proposed Aeolus Substation at MP 70.3 on the north side of the Medicine Bow River. Proposed Route 1W(c) enters and then exits the proposed Aeolus Substation, heading south to MP 71.0 before turning west to rejoin the existing Dave Johnston – Rock Springs line at MP 71.7. Approximately 1.2 miles of the existing Dave Johnston – Rock Springs line to the west of the Aeolus Substation will be demolished to prepare the new line entry and exit points to the substation.

The Proposed Route 1W(c) would not be in conformance with the Medicine Bow Forest Plan, which would need to be amended to allow the Project to cross the National Forest due to wildlife, recreation, and scenery restrictions. Table 2.2-3 describes the management direction, the proposed amendment, and the sections of Chapter 3 where the effects are analyzed. Appendix F provides the proposed amendments and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.2.4 Alternative 1W(a)-B (1, 1f, 1a)

Alternative 1W(a)-B would be an alternative to the north end of the Proposed Route between points 1 and 1a, where it would join the Proposed Route. This alternative was part of the Proposed Route in the Draft EIS. The alternative would begin at the proposed Windstar Substation and head west to the north of the town of Glenrock along an existing 230-kV line for approximately 7 miles. It would then turn south, crossing the Burlington Northern Railroad, North Platte River, I-20, the Chicago and Northwestern Railroad, I-25, and 230-kV and 115-kV transmission lines to the west of Glenrock and Deer Creek. The route passes through big game crucial winter range at MPs 3.7 to 6.8 and 8.1 to 15.5. The route terminates at reference point 1a on the Proposed Route 1W(a).

No land use plan amendments are required for this alternative or the corresponding portion of the Proposed Route.

2.4.3 Segment 2 – Aeolus to Creston

2.4.3.1 General Description and Issues

Segment 2 consists of one single-circuit 500-kV transmission line between the proposed Aeolus Substation and the location of the originally planned Creston Substation (hereafter abbreviated as Creston) near Wamsutter, Wyoming. This segment generally follows a combination of the WWE corridor and existing transmission lines. Appendix A, Figure A-3 shows the location of Segment 2 between the Aeolus Substation and Creston. Alternative 2C, as analyzed in the Draft EIS, has been incorporated into the Proposed Route.

Segment 2 as proposed would use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Segment 2 is approximately 92 miles long and would therefore need two optical signal regeneration sites, one site in the area south of Rawlins and another in the general location of Creston. Final locations for regeneration stations would be determined after detailed design engineering is completed.

Alternatives focused on an existing 230-kV utility corridor that is also a WWE corridor and a BLM-designated ROW corridor, as well as a relatively direct route. The proposed

route location for the Gateway South Project[3] was also considered. Among the key factors considered in routing this segment were visual resources visible from the Fort Fred Steele State Historic Site and nearby residences, sage-grouse and big game winter range, mining leases, and SRMAs. The BLM determined that conflicts can be resolved using the administrative process outlined in the Rawlins RMP under Appendix 1, "Wyoming Bureau of Land Management Mitigation Guidelines for Surface Disturbing and Disruptive Activities," so no land use plan amendments are required on Segment 2.

2.4.3.2 Proposed Route (2, 2a, 2b, 2c, 2d, 2e, 2f, 2g, 3)

The proposed 91.9-mile-long 500-kV single-circuit line exits the proposed Aeolus Substation to the west, crossing County Road 121 and the Medicine Bow River, and paralleling the northern edge of the Seven Mile Hill Wind Energy Project. At MP 7.2 , the route turns in a southerly direction, generally following first Hanna Draw and then Saint Mary's Creek, for about 27.0 miles through the Hanna Sage-Grouse Core Area (Hanna Core Area) and an active coal mining area north and west of Hanna. The Proposed Route between MP 3.0 and 30.0 was recommended as the preferred route by the Wyoming Governor's Office and follows the corridor established by EO-2011-5. At MP 28.0, the Proposed Route passes between Dana Ridge and Saint Mary's Ridge, and briefly parallels US 30 along an existing pipeline corridor before turning west across the southern end of the Fort Steele Breaks near Walcott Junction. The Proposed Route then parallels I-80 on the north side for about 4.5 miles before crossing I-80 and the North Platte River approximately 1.5 miles south of the Fort Fred Steele State Historic Site. At MP 38.0, the Proposed Route crosses the North Platte River between two bald eagle nest buffers, and from there proceeds west, passing between two Wyoming Game and Fish Department (WGFD) parcels and a BLM Special Recreation Management Area (SRMA), and multiple raptor nests. The Proposed Route then passes through alternating sections of private and BLM-managed land, following an existing pipeline northwest for 4 miles before again continuing west at MP 42.2.

Proceeding west, the Proposed Route passes north of Severson Flats and south of the Grenville Dome, the Wyoming State Penitentiary, and the Rawlins water treatment facility before crossing SR 71 about 2.7 miles south of Rawlins. Between MP 42.8 and MP 48.9, the route would also cross the proposed Anschutz Wind Project. In addition, two other proposed transmission lines would follow much the same path as the Proposed Route of Segment 2. West of SR 71, the route traverses Coal Creek and Coal Mine Ridge south of and parallel to an existing 230-kV line. The route continues at varying distances from the existing 230-kV line to Creston. In this last 40-mile segment, the route crosses Hogback Ridge, Red Rim, SR 789, and several active oil and gas fields in the Echo Springs area before reaching Creston about 4.0 miles south of Wamsutter.

The Proposed Route follows the WWE corridor, which is also a BLM-designated ROW corridor (BLM 2008a), where feasible. It diverts only to stay within the transmission corridor through core sage-grouse population areas established by the Wyoming

[3] PacifiCorp initiated siting studies for the Gateway South Project, which is a proposed transmission line from the Aeolus Substation in Wyoming to the Clover Substation near Mona, Utah. While part of PacifiCorp's overall expansion of its portion of the western grid, Gateway South is an independent project from Gateway West. See Chapter 4 – Cumulative Effects, for more information on the Gateway South Project.

Governor's EO-2011-5 and to avoid the Fort Fred Steele State Historic site, the communities of Sinclair and Rawlins, the Seven Mile Hill Wind Energy Project, sage-grouse leks, and oil and gas well infrastructure. The Proposed Route is within or parallel to the WWE corridor (which is also an existing transmission line corridor) for 39.8 miles out of a total route length of 91.9 miles The Proposed Route crosses the Hanna Core Area within the Wyoming Governor's EO-2011-5 designated corridor on a Greenfield route from approximately MP 3.0 to 30.0.

2.4.3.3 Alternatives Studied in Detail

Alternative 2A (2b, 2e)

Alternative 2A was initially considered because it would follow an existing transmission line corridor that is also a WWE corridor and a BLM-designated ROW corridor. However, this alignment is not the Proposed Route because of its proximity to the Fort Fred Steele State Historic Site and several residences. This alternative is approximately 16.0 miles long, compared to 16.8 miles for the corresponding portion of the Proposed Route.

Alternative 2A would begin approximately 6.3 miles northeast of Walcott Junction, where the Proposed Route crosses an existing 230-kV transmission line (2b). This alternative follows the existing 230-kV transmission line within the WWE corridor (on federally managed land) or the projected corridor (on non-federal land) for a total of 11.0 miles north of US 30/287, crossing Saint Mary's Creek at MP 2.0, running about 1 mile south of Saint Mary's Ridge in a southwesterly direction. At MP 5.5, the alternative proceeds due west for 5 miles, still following the existing 230-kV transmission line, traversing the southern Fort Steele Breaks, crossing Saint Mary's Creek a second time near MP 8.0 and the North Platte River at MP 9.9, south of the Fort Fred Steele State Historic Site. The alternative follows the existing 230-kV transmission line an additional 1 mile to the west. At this point, the alternative would depart from the existing transmission line and head generally southwest, crossing I-80 and US 287/30 at MP 13.6, and continuing another 2.5 miles to a location just southeast of Grenville Dome and approximately 4 miles southeast of Sinclair. This alternative would parallel existing transmission lines for 12.1 miles.

Alternative 2B (2c, 2e)

Alternative 2B was originally the Proposed Route; however, concerns raised by local residents, as well as issues related to visual impacts from the Fort Fred Steele State Historic Site, resulted in the Proponents changing this route segment from proposed to a feasible alternative. This alternative is approximately 12.2 miles long, compared to 12.5 miles of the corresponding portion for the Proposed Route. The length was increased in order to tie in with the Proposed Route alignment.

This alternative consists of the original proposed alignment in the vicinity of Fort Fred Steele State Historic Site. It would cross immediately south of the historic site main compound. This alternative would make maximum use of following an existing transmission line corridor and the designated WWE corridor.

2.4.4 Segment 3 – Creston to Anticline

2.4.4.1 General Description and Issues

A single-circuit 500-kV line is proposed from Creston, approximately 2.1 miles south of Wamsutter, Wyoming, to the proposed Anticline Substation near the Jim Bridger Power Plant. Appendix A, Figure A-4 is a map of Segment 3. Segment 3 as proposed would use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). The single-circuit transmission line would require a 250-foot ROW. This segment also includes a short segment of 345-kV line to connect to the existing Jim Bridger Power Plant Substation.

The Proposed Route would generally follow I-80 and portions of the Proposed Route would also fall within the WWE corridor. However, constraints presented by existing development associated with roads, railroads, mining, and oil and gas operations influence siting and the feasibility of using the WWE corridor. The Proposed Route follows the BLM Rawlins RMP direction to place utilities along the I-80 corridor (BLM 2008a) and the BLM Rock Springs RMP direction to place major utilities along existing corridors (BLM 1997).

The 500-kV portion of Segment 3 is less than 55 miles in length and, therefore, would not need optical signal regeneration sites, relying rather on signal regeneration at the substations.

2.4.4.2 Proposed Route (3, 3a, 4)

Segment 3 has two components: a 45.9-mile-long 500-kV line between the terminus of Segment 2 (Creston) and the proposed Anticline Substation (Segment 3), and a short 5.1-mile 345-kV interconnection between the existing Jim Bridger 345-kV substation and the proposed Anticline Substation (Segment 3A) (see Section 2.4.4.3 below).

The 500-kV portion of Segment 3 begins at Creston and proceeds west for 17 miles, before turning northwest and crossing I-80 at MP 19.3. This 17-mile segment parallels I-80 approximately 2 to 3 miles to the south, north of the Delaney Rim. Once north of I-80, Segment 3 stays north of the highway until it reaches the Jim Bridger Power Plant access road and rail spur east of Point of Rocks. Oil and gas pipelines and wells, as well as water wells on private lands, were important routing considerations for this segment. At MP 43.1, the 500-kV circuit turns north and proceeds for about 2.6 miles along the east side of Deadman Wash before entering the proposed Anticline Substation.

Appendix A, Figure A-4 shows the location of Segment 3. Segment 3 would use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Segment 3 parallels existing transmission lines for 40.9 of its 45.9 miles. No optical signal regeneration site is needed.

Land use plan amendments for raptor nest protection would be required for Segment 3.

2.4.4.3 Segment 3A – Anticline to Bridger

Segment 3A is a different voltage from the rest of Segment 3. A 5.1-mile interconnecting 345-kV transmission line would be constructed between the proposed Anticline Substation and the existing Jim Bridger Substation 345-kV yard to electrically

connect the two substations. About 0.5 mile east of the plant access road, this route angles to the northwest on the east side of Deadman Wash before turning west and then south into the existing substation. No optical signal regeneration site is needed. Appendix A, Figure A-4 includes an inset showing the location of Segment 3A.

2.4.4.4 Alternatives Studied in Detail

No alternatives other than the Proposed Route were considered in detail for Segment 3.

2.4.5 Segment 4 – Anticline to Populus

2.4.5.1 General Description and Issues

One single-circuit 500-kV line is proposed between the proposed Anticline Substation and the existing Populus Substation near Downey in southern Bannock County, Idaho. This segment generally follows an existing transmission line corridor on BLM-managed lands. It is not within a utility corridor within the Caribou-Targhee NF. Appendix A, Figures A-5 and A-6 show the Proposed Route for Segment 4 in Wyoming and Idaho, respectively.

Segment 4 as proposed would use 500-kV single-circuit lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Segment 4 is 197.6 miles long and would require three optical signal regeneration sites spaced approximately equidistant along its route. Final locations for regeneration stations would be determined after detailed design engineering is completed.

The major factors influencing routing decisions for this segment were:

- Existing 345-kV transmission ROW, comprising two to three single-circuit 345-kV lines along the entire length of the segment;
- North-south oriented NWRs (Seedskadee, Cokeville Meadows, and Bear Lake);
- Fossil Butte National Monument;
- Sage-grouse core areas and consistency with the Wyoming Governor's EO;
- Caribou-Targhee NF, which could not be avoided. The Proposed Route could not be located within the existing utility corridor identified in the Forest Plan;
- Visually sensitive areas, including viewsheds from historic trails; and
- Use of WWE corridor where feasible.

Where practical, the proposed single-circuit 500-kV line was routed to follow the existing 345-kV transmission line corridor (with a minimum 1,500-foot separation from the centerline of the nearest existing line). In some instances, the existing transmission corridor could not be followed due to resource concerns such as sage-grouse leks, oil and gas wells, raptor nests, and historic trails, deviations or refinements were incorporated into the alignments in these locations.

For Segment 4, the WWE corridor generally trends in a southwest direction beginning near point 4a, while the Proposed Route must trend due west to connect with the planned Populus Substation.

Segment 4 includes five subsegments, each having its own set of opportunities and constraints:

- The **Rock Springs Subsegment** extends approximately 52 miles to the west of the Anticline Substation toward the Seedskadee NWR (point 4a). It is the only subsegment where a designated WWE corridor exists. A main constraint in this subsegment is the Seedskadee NWR along the Green River. Other constraints include trona and coal mining, sage-grouse leks and buffers and core area, proximity to the Spring Canyon Subdivision, VRM Class II lands, and raptor nests and buffers. The primary routing opportunities are the planned transmission corridor and the WWE corridor.
- The **Kemmerer Subsegment** extends approximately 90 miles from the vicinity of Seedskadee NWR to the area east of Bear Lake (point 4a to 4e). This subsegment has been the subject of multiple stakeholder meetings and discussions concerning resource issues including sage-grouse leks and core areas, historic trails, VRM Class II lands, SMAs, the Cokeville Meadows NWR, the community of Cokeville, and big game wintering and parturition areas. Following public comments on the Draft EIS, the Proposed Route has been revised in this subsegment.
- The **Montpelier Subsegment** extends approximately 24 miles to the eastern boundary of the Caribou-Targhee NF (point 4e to MP 160). The primary opportunity in this area is the existing 345-kV transmission line corridor. Constraints in this area include the community of Montpelier, the Bear Lake County airport, Bear Lake NWR, wetlands and waterbodies, agricultural lands, the Bear River, big game crucial winter habitat, and local development, including residences.
- The **Cache Subsegment** is approximately 9.1 miles long and extends across a portion of the Cache NF administered by the Caribou-Targhee NF (MP 161.1 to MP 170.2). Although there is an existing Forest Service–designated utility corridor through this general area, it is only 600 feet wide and cannot accommodate the proposed 500-kV line with a 1,500-foot offset from the existing 345-kV lines. Constraints along this subsegment include steep terrain and unstable slopes, highly erodible soils, riparian areas, Forest Service Visual Retention and Partial Retention areas, and raptor nests.
- The **Populus Subsegment** continues approximately 26 miles to the Populus Substation from the western boundary of the Caribou-Targhee NF (MP 170.2 to point 5). Localized constraints include sage-grouse leks, the communities of Thatcher and Downey, the air strip east of Downey, recreation areas, big game crucial winter range, steep topography, and agricultural land.

2.4.5.2 Proposed Route (4, 4a, 4b, 4c, 4d, 4e, 4f, 4g, 4h, 4i, 5)

The proposed single-circuit 500-kV segment extends from the proposed Anticline Substation southeast of the Jim Bridger Power Plant, mainly along the existing 345-kV corridor (partially along the designated WWE corridor in Sweetwater County, Wyoming) to the existing Populus Substation west of the community of Downey in Bannock County, Idaho. The Proposed Route exits the proposed Anticline Substation to the west and parallels the south side of the existing 345-kV corridor for about 40.0 miles. After

bypassing south of the Seedskadee NWR, it continues to generally follow the existing transmission lines the remaining 140 miles into the Populus Substation. The Proposed Route crosses the Greater South Pass Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 32.7 to MP 44.5. The route then crosses the Seedskadee Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 57.8 to MP 70.2. The route then crosses the Sage Core Area in the Wyoming Governor's EO-2011-5 designated corridor between MP 103.8 to MP 119.8. All three crossings of sage-grouse core area occur adjacent to the existing 345-kV transmission lines.

As the Proposed Route exits the Anticline Substation, it crosses Deadman Wash and joins the existing 345-kV transmission corridor at MP 5.0 before continuing west across the North Baxter Basin and crossing Killpecker Creek, US 191, and the White Mountains about 10 miles north of Rock Springs. The route continues to parallel the existing 345-kV corridor west toward the Seedskadee NWR where it deviates south at MP 45.8 across Stevens Flat and an active trona mining area to avoid the southern boundary of the Refuge near Big Island. The Proposed Route crosses the Green River at MP 52.0 then turns north at MP 53.4 paralleling SR 372 for approximately 3.5 miles before turning west again to parallel the existing 345-kV corridor through the oil and natural gas fields in Whiskey Basin, and crossing Oyster Ridge and US 189 about 4.5 miles north of Kemmerer. Between MP 67.0 and MP 136.8, the Proposed Route follows the alignment recommended by the Wyoming Governor's Office. At MP 100.0, the Proposed Route crosses to the north side of the existing 345-kV corridor in the Pomeroy Basin before continuing west still parallel to the existing corridor, crossing Commissary Ridge and then the Hams Fork River south of Kemmerer Reservoir. Still parallel to the 345-kV corridor, the route continues to the northwest across the Hams Fork Plateau and the Tunp Range/Rock Creek Ridge, deviating slightly north to cross US 30/SR 89, before crossing the Bear River south of Cokeville.

At MP 126.0 the route continues northwest parallel to the existing corridor, crossing Boundary Ridge from Lincoln County, Wyoming, into Bear Lake County, Idaho, at MP 130.0. From the state line, the Proposed Route continues to parallel the north side of the existing 345-kV corridor crossing the Bear River at MP 134.3 before deviating north for about 4.5 miles across Sheep Creek and the Sheep Creek Hills to avoid residences. The Proposed Route then rejoins the existing 345-kV corridor and continues west to cross US 30 about 2.8 miles south of the community of Montpelier.

The Proposed Route remains parallel to the northernmost circuit of the existing 345-kV corridor crossing Bear Lake Valley, US 89, and the Bear River before proceeding to the eastern boundary of the Caribou-Targhee NF at MP 161.1. The Proposed Route crosses about 9.1 miles within the Caribou-Targhee NF boundary on a new ROW approximately 1.5 miles north of the existing 345-kV transmission corridor The route then rejoins the existing corridor west of SR 34 crossing Mound Valley and the Bear River for a fourth time.

At MP 180.0, the Proposed Route again leaves the existing 345-kV corridor to avoid steep terrain and sage-grouse leks and proceeds west, passing along the north side of Dry Hollow Mountain before angling northwest toward the community of Downey. About 2 miles south of Downey, the Proposed Route crosses US 91 and the Marsh Valley,

angling southwest to minimize impacts to the Downey Airport. It then continues northwest into the existing Populus Substation located about 1.3 miles west of Downey.

The Proposed Route would not be in conformance with the management direction provided in the Kemmerer and Green River RMPs, nor would it be consistent with the Caribou Forest Plan. Amendments would be required in the Kemmerer RMP to allow site-disturbing activity within closer distance of an NHT, to allow the Project in a VRM Class II area, and to allow the Project where it would otherwise conflict with historic preservation management. An amendment would be required for the Green River RMP to allow the Project to cross land classified as VRM Class II. Lastly, the Caribou Forest Plan would require an amendment to classify the ROW as a utility corridor (Prescription 8.1), to reclassify approximately 835 acres affected by the transmission line and new permanent roads to Roaded Natural (RN), and to address changes to standards and guidelines associated with the associated amendment. Tables 2.2-2 and 2.2-3 describe the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.5.3 Alternatives Studied in Detail

Alternative 4B (4a, 4j, 4l, 4m, 4o, 4e)

Alternative 4B is based on the route alternative originally proposed by the BLM Kemmerer Field Office (FO). Concerns about that alternative voiced by the WGFD and USFWS were used to modify this alternative in order to change the crossing of the Cokeville Meadows NWR and avoid higher-quality habitats to the south. This alternative is approximately 100.2 miles long, compared to 85.2 miles for the corresponding portion of the Proposed Route.

Alternative 4B would depart from the Proposed Route just west of Seedskadee NWR (point 4a) and head west, crossing active trona mines to the area south of the intersection of US 30/SR 89 south of Kemmerer. The alternative would depart north and west close to US 30/89 and in the valley close to the entrance to Fossil Butte National Monument. It would cross a portion of the BLM-designated Bear River SRMA. This alternative would cross the Cokeville Meadows NWR south of current NWR-managed lands, although still within the established boundary. Once across NWR, this alternative continues north for 16.0 miles, generally following the east side of the Wyoming/Utah and then the Wyoming/Idaho state lines. West of Cokeville, this route angles northwest across the state line into Idaho, ending at point 4e.

Alternative 4B would comprise 82.5 miles of Greenfield route and 17.7 miles adjacent to existing transmission lines. The alternative crosses the Seedskadee Core Area between MPs 1.9 to 12 on a Greenfield route and the Sage Core Area on Greenfield route between MPs 35.5 to 43.4 and MPs 49.2 to 70.5 and is adjacent to existing transmission lines between MPs 12 to 14.5 and 33.4 to 35.5.

Alternative 4B would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat and impacts to lands designated as VRM Class II. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed.

Appendix F provides the associated amendment and Appendix G provides the analysis and rationale for visual resources amendment.

Alternative 4C (4a, 4j, 4l, 4m, 4n, 4o, 4e)

Alternative 4C is also based on the route alternative originally proposed by the BLM Kemmerer FO. This alternative is approximately 101.6 miles long, compared to 85.2 miles for the corresponding portion of the Proposed Route.

Alternative 4C follows the same alignment as Alternative 4B from point 4a to point 4m. From point 4m this alternative would cross US 30 and then turn north, parallel to the east side of US 30/SR 89 and Cokeville Meadows NWR for 11.5 miles, before turning northwest and crossing the highway and the NWR about 5 miles south of the existing 345-kV transmission corridor. At point 4o, the alternative turns north along the Idaho/Wyoming border for about 3 miles where it would then turn northwest and rejoins the Proposed Route at point 4e. This alternative would cross the Cokeville Meadows NWR north of current NWR-managed lands, although still within the established boundary. It would also cross portions of the BLM-designated Bear River and Rock Creek Ridge SRMAs along US 30/SR 89.

Alternative 4C would comprise 83.8 miles of Greenfield route and 17.8 miles adjacent to existing transmission lines. Alternative 4C differs from Alternative 4B in that it continues another 12 miles through the Sage Core Area as a Greenfield route.

Alternative 4C would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat, new roads near sensitive plants, and impacts to lands designated as VRM Class II. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendment.

Alternative 4D (4a, 4j, 4k, 4l, 4m, 4o, 4e)

Alternative 4D was requested by the superintendent of the Fossil Butte National Monument to reduce visual impacts on the monument. This alternative is approximately 100.8 miles long, compared to 85.2 miles for the corresponding portion of the Proposed Route.

Alternative 4D follows the same alignment as Alternatives 4B and 4C from point 4a to point 4j. The alternative would modify a portion of Alternative 4B between points 4j and 4k, shifting farther south, thereby increasing the distance from Fossil Butte National Monument. From point 4l it would follow the same alignment as Alternative 4B and rejoin the Proposed Route at point 4e.

Alternative 4D would comprise 86.1 miles of Greenfield route and 14.7 miles adjacent to existing transmission lines. Alternative 4D crosses the same amount of sage-grouse core area as Alternative 4B.

Alternative 4D would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat and impacts to lands designated as VRM Class II. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed.

Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendment.

Alternative 4E (4a, 4j, 4k, 4l, 4m, 4n, 4o, 4e)

Alternative 4E was requested by the superintendent of the Fossil Butte National Monument to reduce visual impacts on the monument. This alternative is approximately 102.2 miles long, compared to 85.2 miles for the corresponding portion of the Proposed Route.

Alternative 4E follows the same alignment as Alternative 4D from point 4a to point 4l (see above). From point 4l this alternative would turn north and follow the same alignment as Alternative 4C.

Alternative 4E would comprise 87.5 miles of Greenfield route and 14.7 miles adjacent to existing transmission lines. Alternative 4E crosses approximately the same amount of sage-grouse core area as Alternative 4C.

Alternative 4E would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat and impacts to lands designated as VRM Class II. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendment.

Alternative 4F (4a, 4b, 4c, 4p, 4d, 4e)

Alternative 4F was originally proposed by the Proponents; however, over several agency scoping meetings, it was determined that the Proposed Route described in Section 2.4.5.2 would likely have fewer impacts. Therefore, the Proponents adopted the suggested route as proposed, and have requested that the original route segment (i.e., Alternative 4F) be carried through detailed analysis as a feasible alternative. This alternative is approximately 87.5 miles long, compared to 85.2 miles for the corresponding portion of the Proposed Route.

From point 4a to point 4c this alternative is the same as the Proposed Route. At point 4c, Alternative 4F diverges from the Proposed Route and the existing 345-kV corridor, passing between Kemmerer Reservoir and Viva Naughton Reservoir. The alternative then turns north for about 5 miles, crossing a historic trail (Dempsey-Hockaday Trail), then northwest for about 12 miles, north of Coke Mountain and 2.5 miles north of the community of Cokeville, before rejoining the Proposed Route at point 4d. From there, the alternative is the same as the Proposed Route for the final 13 miles, to point 4e.

Alternative 4F would comprise 57.0 miles of Greenfield route and 30.5 miles adjacent to existing transmission lines. The route crosses the Seedskadee Core Area between MPs 58 to MP 68 where it diverges west for another 2 miles before leaving the core area. The route then crosses the Sage Core Area for 14 miles on a Greenfield route.

Alternative 4F would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat, one historic trail crossing, and impacts to lands designated as VRM Class II. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are

analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendment.

Alternative 4G (4f, 4g, 4h)

Alternative 4G was proposed by the Forest Service to avoid crossing steep slopes and unstable soils along a portion of the Proposed Route in Sections 1 and 2, Township 12 South, Range 41 East. These areas were identified by a soil survey completed in October 2012 by the Forest Service. Alternative 4G would diverge from the Proposed Route within the Forest at point 4f near MP 167.0, follow a north/north west alignment to point 4g and then a west/southwest alignment along a ridge for approximately 2.6 miles. Alternative 4G would then rejoin the Proposed Route at point 4h near MP 169.4, approximately 0.75 mile from the Forest's western boundary near MP 170. This route would be approximately 0.3 miles longer than the comparison portion of the Proposed Route. Alternative 4G would require a Forest Plan amendment to classify the ROW as a utility corridor (Prescription 8.1), to reclassify approximately the area affected by the transmission line and new permanent roads to RN, and to address changes to standards and guidelines associated with the proposed amendment. Appendix F provides the proposed Forest Plan amendment associated with this route and Appendix G provides the analysis of visual resources associated with the amendment.

2.4.6 Segment 5 – Populus to Borah

2.4.6.1 General Description and Issues

One single-circuit 500-kV line is proposed between the existing Populus Substation and the existing Borah Substation in Power County, Idaho. This line would be constructed with 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-7 shows the Proposed Route for Segment 5.

Among the key factors considered in routing this segment were visual resources near the Deep Creek Mountains, agriculture in the Arbon and Rockland Valleys, crossing the Fort Hall Indian Reservation, residential developments, the Arbon Elementary School, and the East Fork Rock Creek Recreation Area, as well as potential disturbance to nesting bald eagles along the Snake River.

Segment 5 is 55.7 miles long and therefore would not need optical signal regeneration sites. There are no WWE corridors within Segment 5. One of the alternatives selected for detailed analysis follows the existing 345-kV transmission line corridor.

2.4.6.2 Proposed Route (5, 5a, 5b, 5c, 5d, 5e, 5f, 6)

The proposed single-circuit 500-kV segment is approximately 55.7 miles long and would extend from the existing Populus Substation to the existing Borah Substation south of American Falls in Power County (points 5 and 6). Two existing 345-kV transmission lines currently extend between the two substations. The Proposed Route follows the existing lines from the existing Populus Substation northwest for approximately 12 miles, crossing the existing lines just north of Hawkins Reservoir and south of Hawkins Basin, at which point the Proposed Route follows a Greenfield alignment for the remainder of the route, extending northwest along the foothills to the west of Hawkins Basin before turning west, south of the Fort Hall Indian Reservation, crossing the Arbon Valley and the Deep Creek Mountains and then turning north east of

Rockland and on to the existing Borah Substation. The Proposed Route is generally parallel and adjacent to the Proposed Populus – Cedar Hill line (see Segment 7 below) for much of the first 36 miles.

The Proposed Route crosses I-15 about 2 miles northwest of the Populus Substation. At point 5a, the Proposed Route turns west, crossing the existing 345-kV corridor at MP 12.4 and then the Bannock County/Power County line at MP 18.2. The route continues west, parallel to the proposed Populus – Cedar Hill line (Segment 7), crossing the Arbon Valley and the Deep Creek Mountains south of the Fort Hall Reservation. On the west side of the Deep Creek Mountains, the Proposed Route turns north approximately 4.5 miles west of Rockland (MP 36) and continues north along the eastern edge of the Rockland Valley in the foothills between the mountains and SR 37.

Proceeding north along the western foothills of the Deep Creek Mountains, the route crosses several drainages and springs, particularly the East Fork of Rock Creek, generally avoiding farm land located west of the route. The route crosses VRM Class II land at several points, but avoids the Bowen Canyon Bald Eagle Sanctuary in the mountains to the east. At MP 49.9 the route proceeds west, again parallel to the existing 345-kV corridor, crossing I-86, SR 37, and US 30 before crossing the Snake River and entering the existing Borah Substation.

From MP 36.0 north to the existing Borah Substation, the current Proposed Route is about 1 to 2 miles east of the Proponents' original Proposed Route. Meetings with local landowners and Power County representatives identified a more acceptable route that was subsequently adopted by the Proponents. As a result, more of the current Proposed Route is located on public land.

The Segment 5 Proposed Route is mostly adjacent to, but offset approximately 1,500 feet from, the Segment 7 Proposed Route for approximately 30 miles. Of its total length, the Proposed Route will be Greenfield for 49.3 miles and parallel to existing transmission lines for 6.4 miles.

The Proposed Route would not be in conformance with the management direction provided in the Pocatello RMP. An amendment would be required to allow a single-use visually altering action. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment and Appendix G provides the analysis and rationale for the visual resources amendment.

2.4.6.3 Alternatives Studied in Detail

Alternative 5A (5b, 5g, 5i, 5d)

Alternative 5A was routed to eliminate the crossings of VRM Class II lands and to avoid high-quality forested habitat on BLM-managed land in the northern portion of the Deep Creek Mountains. The entire route except for 0.6 mile would be Greenfield. This alternative is approximately 29.7 miles long, compared to 22.3 miles for the corresponding portion of the Proposed Route.

This alternative would diverge from the Proposed Route northwest of Hawkins Reservoir (point 5b) and head in a southwesterly direction through the very northern portion of Oneida County, continue west north of the community of Arbon in the Arbon

Valley, and enter the Deep Creek Mountains. This alternative would traverse the Deep Creek Mountains for approximately 9 miles. The alternative then turns north in the Rockland Valley between the mountains and SR 37, making a short turn to the northeast before meeting the Proposed Route at point 5d.

No land use amendment would be required for this alternative.

Alternative 5B (5b, 5g, 5h, 5i, 5j)

Alternative 5B was routed to eliminate the crossings of VRM Class II areas and to avoid high-quality forested habitat on BLM-managed land in the northern portion of the Deep Creek Mountain. The entire route except for 0.6 mile would be Greenfield. This alternative is approximately 40.4 miles long, compared to 22.3 miles for the corresponding portion of the Proposed Route.

This alternative follows the same alignment as Alternative 5A between point 5b and point 5g. At point 5g, this alternative continues in a southerly direction northwest of Daniels Basin for about 15 miles to a location north of the community of Buist in the southern Arbon Valley (point 5h). There it turns west, traverses the Deep Creek Mountains and then, approximately 4.5 miles east of the community of Roy, turns north along the Rockland Valley between the mountains and SR 37, before rejoining Alternative 5A at point 5i.

No land use amendment would be required for this alternative.

Alternative 5C (5c, 5e)

Alternative 5C was identified for detailed analysis because it is the most direct option between the Populus and Borah Substations, and because it would follow an existing transmission line corridor for most of the segment length and has more gentle terrain and less visual impacts. Of its total length, 8.4 miles would be Greenfield and 17.6 miles would be adjacent to an existing transmission line. Power County has formally endorsed this route (Power County 2009a). This alternative is approximately 26 miles long, compared to 32.9 miles for the corresponding portion of the Proposed Route.

The alternative would depart from the Proposed Route at point 5c, parallel to and south of the existing transmission line corridor. At MP 8.2 this alternative crosses into the Fort Hall Indian Reservation. From that point, it would traverse to the northwest for 12.4 miles through the reservation. West of the reservation, it would cross primarily private lands, passing between the existing transmission corridor and the northern edge of the Power County Wind Park (South) before rejoining the Proposed Route at point 5e.

No land use plan amendment would be required for this alternative. However, the Fort Hall Business Council formally rejected this route crossing the Reservation (Fort Hall Business Council 2012).

Alternative 5D (5d, 5j, 6)

Alternative 5D was originally the Proposed Route; however, Power County representatives and residents identified concerns about the impacts that this route could have on farmland in this area. Other issues that have been identified regarding this route include its proximity to existing and planned residences as well as a bald eagle nest site, and the crossing of the Snake River. Therefore, modifications were made to

create the Proposed Route, and this route (i.e., Alternative 5D) became a feasible alternative. This alternative is approximately 17 miles long, compared to 19.2 miles for the corresponding portion of the Proposed Route. All but 1 mile of the route would be Greenfield.

Alternative 5D is located 1 to 2 miles west of the Proposed Route. At point 5d the route proceeds west along the north side of East Fork Rock Creek for approximately 2 miles before turning north about 3 miles east of Rockland, Idaho. The alternative proceeds north and slightly west for about 12.5 miles through predominantly private farmland. Between MP 9.8 and MP 12.3, the alternative skirts the eastern edge of the Rockland Wind Project. The alternative then turns to the west, crossing I-86, passing through a bald eagle nest buffer, across the Snake River and into Borah Substation.

No land use plan amendment would be required for this alternative.

Alternative 5E (5l, 5m, 6)

Alternative 5E was developed based on a request from Power County that an alternative route be considered along the portion of Segment 5 that approaches the crossing of the Snake River from the east (Power County 2009b). This alternative is approximately 5.3 miles long, compared to 5.8 miles for the corresponding portion of the Proposed Route. The entire length of the route would be Greenfield.

Alternative 5E would begin at point 5e and proceed northwest for approximately 0.4 mile before crossing to the north of the existing 230-kV and 345-kV lines. The route would then proceed due west directly adjacent to the existing lines. The proposed and existing lines would remain parallel and adjacent for approximately 4.2 miles, crossing irrigated farmland and Snake River in this interval. The route would then cross a 230-kV transmission line and the three lines would run parallel and adjacent for about 1.1 miles into the Borah Substation (point 6).

No land use plan amendment would be required for this alternative.

2.4.7 Segment 6 – Borah to Midpoint

2.4.7.1 General Description and Issues

In Segment 6, from the existing Borah Substation to the existing Midpoint Substation located approximately 9 miles south of Shoshone, Idaho, the voltage would be increased to 500 kV on the existing Midpoint – Kinport 345-kV transmission line. The line would be routed into the proposed 500-kV yard at the Borah Substation requiring approximately five structure replacements in the immediate vicinity of the Borah and Midpoint Substations but requiring no other transmission line construction. The remaining line from Borah to Kinport terminates in the existing 345-kV yard at the Borah Substation and would remain in operation at 345 kV. The structures utilized for the reroutes on each end of this line segment would be 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-8 shows the locations of the Borah and Midpoint Substations and the existing 345-kV line.

2.4.7.2 Proposed Route

The line segment between the Borah and Midpoint Substations, Segment 6, is part of the existing 345-kV transmission line that was constructed to 500-kV design standards

although currently operated at 345 kV. No new transmission line construction would be required along Segment 6 to operate this line segment at 500 kV, except in the vicinity of the Borah and Midpoint Substations. At the Borah and Midpoint Substations, the line would be rerouted and reterminated from the existing 345-kV line bays into the new 500-kV line bays at each substation. Several new structures and conductors would be needed adjacent the Midpoint Substation to reroute the existing 345-kV line from its termination on the north side of the existing station to the proposed 500-kV yard expansion on the south side (Appendix A, Figure A-23). Several new structures and conductors would also be needed at the Borah Substation to reroute the line from the northeast side of the existing station to the proposed 500-kV yard addition on the south side (Appendix A, Figure A-22). A new structure would be needed to route the 345-kV line between Borah and Kinport into the existing 345-kV yard on the east side. The line between Borah and Midpoint would then be energized at 500 kV.

No land use plan amendments would be required for the Segment 6 Proposed Route.

2.4.7.3 Alternatives

No alternatives were considered along this segment because the Proposed Action is an increase in voltage carried by structures and conductors of an existing transmission line.

2.4.8 Segment 7 – Populus to Cedar Hill

2.4.8.1 General Description and Issues

One 118.2-mile single-circuit 500-kV transmission line is proposed between the existing Populus Substation and the proposed Cedar Hill Substation near the county line between Cassia County/Twin Falls Counties in Idaho, approximately 14 miles southeast of Twin Falls. The line would be constructed utilizing 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-9 shows the Proposed Route for Segment 7.

Key factors considered in routing the first third of Segment 7 were similar to those discussed under Segment 5, because the segments parallel one another to the point west of the Deep Creek Mountains where they diverge. Additional factors considered in routing this segment were impacts to agricultural operations, residences, a local hang gliding area, visual resources, NHTs, cultural resources, big game winter range, sage-grouse leks and priority habitat, Designated Roadless Areas, and local county planning goals.

There are no existing east-west transmission lines or WWE corridors within Segment 7. However, I-84 creates an east-west corridor and was considered. Another local concern is the potential for future transmission lines not related to this Project to be located in a corridor adjacent to the one created by the Proposed Route. This concern, combined with concerns over the agricultural impact of the Proposed Route, led Cassia County, through local landowners, to identify and recommend a route that would swing south to the Idaho/Utah/Nevada border. Commonly referred to as the State Line Route, it was designated in the Draft EIS as Alternative 7I. A variation of 7I, designated as Alternative 7J, was identified by Cassia and Twin Falls Counties. It would have required building a new substation (the Rogerson Substation), approximately 24 miles southwest of the Cedar Hill Substation (point 9.a.6). Cassia and Twin Falls Counties have agreed

to replace these two routes with Alternative 7K, which is shorter than Alternatives 7I and 7J but still addresses their concern for agricultural impacts.

Segment 7 is 118.2 miles long and would require two optical signal regeneration sites along its route. Final locations for regeneration stations would be determined after detailed design engineering is completed.

2.4.8.2 Proposed Route (5, 7a, 7b, 7c, 7d, 7e, 7f, 7g, 7h, 7i, 7j, 7k, 7l, 9)

The proposed 118.2-mile single-circuit 500-kV segment would extend from the existing Populus Substation to the proposed Cedar Hill Substation in Cassia County near the Cassia/Twin Falls county line (points 5 and 9). The Proposed Route generally follows the same alignment as the proposed Populus – Borah line (see Segment 5 above) for much of the first 36 miles, and is adjacent to the existing 345-kV transmission corridor between the Populus and Borah Substations for the first 9.2 miles. After crossing the existing 345-kV south of Hawkins Reservoir (MP 9.2), the Proposed Route follows a Greenfield alignment for the remainder of the route. The route then proceeds west along the northern boundary of the Caribou-Targhee NF, avoiding an Inventoried Roadless Area (IRA), and then extends northwest along the foothills to the west of Hawkins Basin before turning west, south of the Fort Hall Indian Reservation. The Proposed Route crosses the Arbon Valley and the Deep Creek Mountains and then continues west, south of Rockland crossing into Cassia County along the northern end of the Sublett Range and the Raft River Valley before continuing west, approximately 8.5 miles south of Burley, for the remaining 40 miles to the proposed Cedar Hill Substation.

The Proposed Route extends northwest from the expanded Populus Substation adjacent to the existing 345-kV lines for 9.2 miles, crossing I-15 at MP 2.0 before turning west and crossing the existing lines south of Cedar Mountain and Hawkins Reservoir. The route proceeds west along the northern boundary of the Caribou-Targhee NF for approximately 3 miles, avoiding the Elkhorn Mountain Designated Roadless Area, before turning northwest again along the foothills west of Hawkins Basin. At MP 16.7, the Proposed Route turns west, crossing Bradley Mountain before continuing west across the Arbon Valley immediately south of Pauline. From there, the Proposed Route continues west across the Deep Creek Mountains before crossing SR 37 at MP 41, less than 1 mile south of Rockland.

The Proposed Route continues west, crossing into Cassia County at MP 47.7 and then the northern toe of the Sublett Range before proceeding across the Raft River Valley. Near MP 59, the route crosses the Raft River and the junction of the Oregon and California NHTs, about 2.5 miles south of I-86. The route continues west to MP 70, before turning southwest approximately 2.5 miles east of the I-84/86 interchange. The route crosses I-84 at MP 72.3 and SR 81 at MP 73.1 before crossing the northern toe of the Cotterel and Albion Mountains and the western edge of the East Hills south of the community of Declo. At MP 89 (point 7j), the Proposed Route continues west, crossing an area of extensive irrigated cropland, pivot irrigation, and dairy operations between MP 92 and MP 110, approximately 8.5 miles south of Burley and 10.5 miles north of Oakley. The Proposed Route then follows the edge of the foothills south of the Cassia/Twin Falls county line, crossing Dry Creek at MP 14.5, and then entering the proposed Cedar Hill Substation northeast of Antelope Valley.

The Segment 7 Proposed Route is mostly adjacent to, but offset approximately 1,500 feet from, the Segment 5 Proposed Route for approximately 30 miles. Of its 118.2-mile length, the Proposed Route would be Greenfield for 101.2 miles and parallel existing transmission lines for 17.0 miles.

The Proposed Route would not be in conformance with the management direction provided in the Cassia and Pocatello RMPs. The Cassia RMP would require an amendment to permit a new ROW. An amendment would be required to the Pocatello RMP to allow the Project without changing the VRM classification. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the proposed amendments and Appendix G provides the analysis and rationale for the visual resources amendment.

2.4.8.3 Alternatives Studied in Detail

Alternative 7A (7a, 5g, 7n, 7c)

Alternative 7A was requested by the Pocatello FO of the BLM to examine in detail alternatives on private and Public lands that did not impact public lands in the Deep Creek Mountains along the Proposed Route. Alternative 7A was developed to be co-located with the Segment 5 Deep Creek Alternative 5A for 33.8 miles. The entire route but for 0.6 mile would be Greenfield. This alternative is 37.7 miles long, compared to 35.1 miles for the corresponding portion of the Proposed Route.

Alternative 7A begins at point 7a, crossing the northwest boundary of the Caribou-Targhee NF outside of the Elkhorn Mountain IRA (MP 0.1 to MP 1.3) and the extreme northern part of Oneida County (MP 2.4 to MP 8.3). Proceeding west, the route crosses the central Arbon Valley just north of the community of Arbon (MP 12.1) and then traverses the Deep Creek Mountains for approximately 8 miles. On the west side of the Deep Creek Mountains it would head northwest across areas of dry land agriculture in the Rockland Valley, crossing SR 37 (MP 25.8) and the South Fork of Rock Creek (MP 26.5), before turning north between Cedar Ridge to the east and the Sublett Range to the west. The route crosses Houtz Canyon at MP 34.8 and continues north for an additional 3 miles, rejoining the Proposed Route at a location approximately 6 miles west of Rockland (point 7c).

No land use amendment would be required for this alternative.

Alternative 7B (7a, 5g, 5h, 7n, 7c)

Alternative 7B was suggested by BLM to avoid public lands designated as VRM Class II, utilize public lands that have existing roads, and to avoid quality forested habitat. The entire route but for 0.6 mile would be Greenfield. This alternative is 46.2 miles long, compared to 35.1 miles for the corresponding portion of the Proposed Route.

This alternative follows the same alignment as Alternative 7A for the first 3.5 miles, diverging at point 5g. From there it follows a similar alignment (offset 1,500 feet to the south) as Alternative 5B (see description above) for the next 23.5 miles. On the west side of the Deep Creek Mountains, this alternative turns northwest across areas of dry land agriculture in the southern Rockland Valley, crossing SR 37 (MP 32.2), and

intersecting with Alternative 7A at point 7n. The alternative follows the same alignments as Alternative 7A (see description above), rejoining the Proposed Route at point 7c.

No land use amendment would be required for this alternative.

Alternative 7C (7d, 7o, 7e)

Alternative 7C was identified to minimize potential impacts at the "Parting of the Ways" site where the California and Oregon NHTs diverge. The entire route would be Greenfield. This alternative is 20.3 miles long, compared to 20.1 miles for the corresponding portion of the Proposed Route.

Alternative 7C diverges from the Proposed Route at point 7d, approximately 10 miles west of Rockland. Alternative 7C runs southwest across northern portions of the Sublett Range for approximately 8 miles. It then proceeds west for 2 miles, crossing Heglar Canyon near MP 9.0 and then northwest across the Raft River Valley for 11 miles, rejoining the Proposed Route at point 7e, about 0.5 miles from I-84.

No land use plan amendment would be required for this alternative.

Alternative 7D (7e, 7p, 7f, 7g)

Alternative 7D was identified to avoid a BLM-managed area at the northern end of the Cotterel Mountains that does not allow new ROWs. The entire route but for 1 mile would be Greenfield. This alternative is 6.8 miles long, compared to 6.2 miles for the corresponding portion of the Proposed Route.

Beginning at point 7e, Alternative 7D crosses I-84 (MP 0.5) and SR 81 (MP 1.5) to the north of the Proposed Route. The alternative is located mainly on private land, and if selected, additional micro-siting would be necessary to avoid wetlands in the Marsh Creek area being restored by Ducks Unlimited. The alternative also parallels a portion of the Oregon NHT for 2.8 miles at a distance of less than 0.5 mile.

No land use plan amendment would be required for this alternative.

Alternative 7E (7h, 7q, 7i)

Alternative 7E was identified to stay east of a hang gliding launch location in the East Hills. The entire route but for 0.7 mile would be Greenfield. This alternative is 4.5 miles long, compared to 3.8 miles for the corresponding portion of the Proposed Route.

Alternative 7E diverges from the Proposed Route at point 7h, approximately 4 miles south of the community of Declo. It proceeds southeast for about 1.5 miles, passing between two sage-grouse lek 0.65-mile buffers, and then southwest approximately 2 miles along Water Canyon. The alternative crosses SR 77 (MP 3.7) about 4.6 miles northwest of Albion, and then rejoins the Proposed Route at point 7i.

Alternative 7E would not be in conformance with the management direction provided in the Cassia RMP. An amendment would be required to allow the Project without modifying the VRM classification in the Goose Creek area, and another amendment required for reclassifying 1,376 acres from VRM III to VRM IV in the Cottonwood Creek area. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the

associated amendment and Appendix G provides the analysis and rationale for the visual resources amendment.

Alternative 7F (7g, 7q, 7j)

Alternative 7F was identified to avoid locating the Project in the foothills of the East Hills and Albion Mountains, where scattered residential developments occur. The entire route but for 0.9 mile would be Greenfield. This alternative is 10.8 miles long, compared to 10.5 miles for the corresponding portion of the Proposed Route.

This alternative leaves the Proposed Route at MP 78.1, and heads in a more southerly direction than the Proposed Route. It is located in more mountainous terrain than the Proposed Route and intercepts one sage-grouse lek 0.25/0.65-mile buffers, four raptor nest buffers, and passes through 10.7 miles of big game winter range. The alternative follows Water Canyon for 3 miles before crossing SR 77 (a scenic byway) at MP 4.8, approximately 3.8 miles northwest of Albion. The alternative continues southwest across areas of dryland agriculture, passing near a concrete plant, before turning west across the north end of the Albion Mountains to rejoin the Proposed Route at point 7j.

No land use plan amendment would be required for this alternative.

Alternative 7G (7k, 7r, 7l)

The Proposed Route would be located in a BLM motorized vehicle closure (winter range, mule deer, sage-grouse) that would restrict access for maintenance and emergency repairs. Alternative 7G was proposed at the border of the BLM/private land interface with the understanding that if emergency repairs are needed, it would be easier to obtain permission to access the line if it is on the border of the restricted area, rather than placed farther into the restricted area (where a plan amendment would be required). The alternative leaves the Proposed Route at point 7k, immediately west of Dry Creek, and then crosses Dry Creek Road (MP 0.3). The alternative continues west approximately 0.4 mile north of, and generally parallel to, the Proposed Route, rejoining the Proposed Route at point 7l. This alternative is 3.4 miles long, compared to 3.3 miles for the corresponding portion of the Proposed Route. The entire route but for 0.5 mile would be Greenfield.

No land use plan amendment would be required for this alternative.

Alternative 7K (5, 7a, 5g, 5h, 7s, 7l, 9)

Substantial landowner opposition was raised to the Proposed Route in Segment 7 due to potential impacts to agricultural land crossed in Cassia and Power County. Through a lengthy process of meetings and correspondence, a multi-county task force was formed consisting of representatives from Bannock, Oneida, Power, Cassia, and Twin Falls County governments and interested landowners. Input was also received from local Idaho state legislators, and the states of Utah and Nevada were contacted with the goal of developing an alternative route. Alternative 7I was recommended by this task force (Cassia County 2009) and analyzed in the Draft EIS. It was approximately 173 miles long. Following publication of the Draft EIS, the Counties and the BLM developed a shorter alternative to replace Alternative 7I. This route is designated as Alternative 7K. This alternative is 148.1 miles long, compared to 118.2 miles for the corresponding portion of the Proposed Route.

From the Populus Substation, this alternative is coincident to the Segment 7 Proposed Route for the first 11.7 miles (point 7a). It then proceeds to the southwest, coincident to Alternative 7B for 17.9 miles (point 5h). At MP 32.9, the alternative turns west and is located along the Power County/Oneida County line across the southern foothills of the Deep Creek Mountains and the Rockland Valley. The route crosses SR 37 at MP 41, approximately 3.5 miles southeast of the community of Roy, turning north approximately 0.5 miles to avoid crossing the Curlew National Grasslands. At MP 45.9, the alternative turns southwest again, crossing the Sawtooth NF and the Sublett Range before entering Cassia County at MP 52.2. At MP 55.8, the alternative turns west, crossing I-84 (MP 57.7) and passing through several raptor nest buffers. The alternative crosses the Raft River-Curlew Valley Important Bird Area for ferruginous hawks between MPs 32.5 to 43.2, 58.3 to 72.0, 75.2 to 75.4, and 85.9 to 97.2. At MP 65.2, the alternative turns to the southwest, then west, passing through the Raft River Valley and then into the Upper Raft River Valley near MP 87. The alternative crosses SR 81 at MP 75.5, the Salt Lake Alternative of the California NHT at MP 82.6, several more raptor nest buffers, and comes within 0.25 mile of the Utah state line in the Cedar Hills near MP 98.3. This portion of the alternative passes just south, but within the viewshed, of the City of Rocks National Reserve. Crossing the Cedar Hills, the alternative continues northwest across Junction Valley and re-crosses the California NHT at MPs 103.8, approximately 2.5 miles from the western entrance to the City of Rocks National Reserve. The route crosses Middle Mountain 2.8 miles north of Granite Pass, and turns north along the east side of Goose Creek. At MP 117, the alternative crosses Goose Creek above the Lower Goose Creek (Oakley) Reservoir and proceeds north along the eastern boundary of the Sawtooth NF approximately 6.8 miles west of the community of Oakley. Continuing north 5.5 miles to avoid the Cottonwood Creek Wildlife Management Area, the route turns west and crosses the northern boundary of the Sawtooth NF (MP 134.6 to MP 140.4). At MP 139.6, the alternative turns northwest, crossing the upper part of Dry Creek canyon near MP 143, and continues the additional 5.1 miles into the proposed Cedar Hill Substation. Of its 148.1-mile length, 133.7 miles would be Greenfield and 14.4 miles would parallel existing transmission lines.

The alignment for Alternative 7K was proposed by Cassia County. It was not based on an indicative design by engineers, as is the case with other routes. A portion of the route crosses the Sublett Range, a mountainous area within the Sawtooth NF. The Forest Service has pointed out that any actual transmission line built across the NF would need to consider topography and should be routed to avoid or be placed along the edges of forested clumps where feasible. Therefore, the alignment shown in Appendix A does not accurately reflect the backdropping and other resource avoidance that would be required for by the Forest Service prior to approval of construction. Figure 2.4-3 shows an alternative route that 7K would follow across the Sublett Division of the Sawtooth NF that better reflects a constructible design. This route would be slightly longer than the route proposed by the Counties.

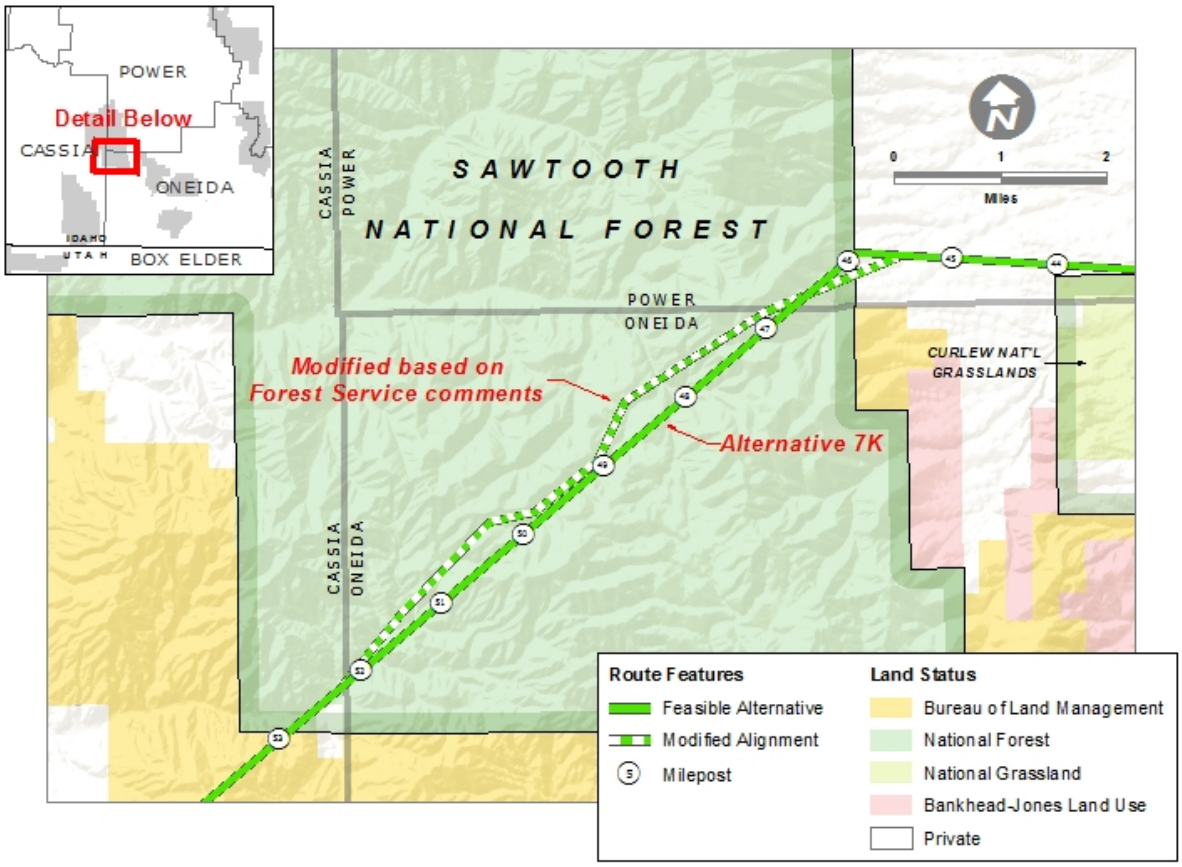


Figure 2.4-3 Alternative 7K Alignment Across the Sublett Division of the Sawtooth NF

Alternative 7K would not be in conformance with the management direction provided in the Cassia RMP. An amendment would be required to allow the Project as a one-time visually altering action without modifying the VRM classification. Also, Alternative 7K would not be consistent with the Sawtooth Forest Plan. An amendment would be required to allow the Project, with mitigation, without changing the VQO. Tables 2.2-2 and 2.2-3 describe the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resource amendment.

2.4.9 Segment 8 – Midpoint to Hemingway

2.4.9.1 General Description and Issues

One single-circuit 500-kV transmission line is proposed between the existing Midpoint Substation and the existing Hemingway Substation, located approximately 30 miles southwest of Boise, Idaho. The line would be constructed using steel lattice towers between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-10 shows the proposed Segment 8 route. The Proposed Route is 131.5 miles long and therefore two optical signal regeneration sites would be needed along the route. Final locations for regeneration stations would be determined after detailed design engineering is completed.

Key factors considered in routing this segment included using the WWE corridor where possible, conflicts with agricultural lands, residential development, visual resources, SRBOP, slickspot peppergrass, Halverson Bar and Wees Bar Non-Motorized Areas, a National Register Historic District, and the IDANG OCTC. The Proposed Route is within the WWE corridor for 38.1 miles, and adjacent to existing transmission corridors for 116.1 miles, out of its total 131.5-mile length.

2.4.9.2 Proposed Route (8, 8a, 8b, 8c, 8d, 8e, 8f, 8g, 8h, 8i, 11)

The 131.5-mile-long Proposed Route (points 8, 11) proceeds west-northwest, parallel to an existing 230-kV line, passing just north of the juncture of the Jerome, Lincoln, and Gooding County lines near MP 9. This route continues in the same direction, passing between Gooding and Wendell before crossing the Malad River (MP 19.3) and US-26 (MP 23.9) approximately 4.5 miles east of the community of Bliss. Southwest of Pioneer Reservoir, the route angles northwest away from the existing 230-kV corridor at the Gooding County/Elmore County line for approximately 7 miles to avoid impacts to a residence in the Clover Creek area. At MP 42.0 the route rejoins the existing 230-kV corridor about 2.8 miles northeast of King Hill. Between MP 45.8 to MP 48.1 and MP 50.2 to MP 51.1, the Proposed Route crosses VRM Class I in an area of multiple transmission lines, and enters the WWE corridor at MP 52.0, deviating up to 2 miles from the 230-kV corridor on private land to avoid wetland impacts in the Bennett Creek area. At MP 58, the route parallels south and west of the existing PacifiCorp 500-kV Summer Lake – Midpoint transmission line offset 1,500 feet for reliability reasons. The route crosses US-20 at MP 68.5 approximately 3.8 miles northeast of Mountain Home. At MP 86.2, the Proposed Route turns west, crossing I-84 at MP 90.2 and the Elmore County/Ada County line at MP 90.9. Continuing west, the Proposed Route is parallel to and approximately 1,500 feet south of the existing Summer Lake – Midpoint 500-kV transmission line for 24.5 miles through the SRBOP.

The route enters the SRBOP at MP 98.8 and continues to the west, then southwest through Ada County. West of Pleasant Valley Road (MP 104.1), the route crosses the Alpha Maneuver Sector for the IDANG OCTC, which is located within the SRBOP, for 4.7 miles (the route would be within the OCTC low-level flight operations area between approximately MP 92 and MP 108). The IDANG recommends that, if this route is selected, the transmission structures be equipped with special lights to prevent military aircraft from colliding with the structures during training (see Section 2.1.1).

At MP 116, the route turns more to the south, away from the existing 500-kV line, crossing the Snake River, the Halverson and Wees Bar Non-Motorized Areas, and a National Register Historic District between MP 117 and MP 120. The Snake River in this area forms the Ada County/Owyhee County line. The route continues southwest another mile and then west around Guffey Butte before intercepting a WWE corridor at MP 124.2 and turning northwest approximately 3.5 miles north of Murphy. The route leaves the SRBOP at MP 126.7 before entering the existing Hemingway Substation. Of its 131.5-mile length, approximately 33 miles are Greenfield and 98.5 miles parallel existing transmission lines.

Several plan amendments would be needed to make the Proposed Route conform with BLM land use plans in effect. The Kuna MFP would need an amendment to allow the transmission line outside of existing corridors. The SRBOP RMP would need

amendments to VRM classes, to permit surface-disturbing activity within 0.5 mile of sensitive plant habitat, and to allow a utility corridor outside the two utility corridors identified in the plan. Another SRBOP RMP amendment would be needed to allow the Proposed Route to be constructed within the Halverson Bar Non-Motorized Area; however, an SRBOP plan amendment would not meet the intent of the enabling legislation for the SRBOP. Alternative 8E would avoid this area. The Proposed Route also crosses the SRBOP within an approved utility corridor between MPs 65.7 and 67.7; no amendment would be needed for this area. In addition, the Proposed Route would not be in conformance with the management direction provided in the Bennett Hills/Timmerman and Jarbidge RMPs. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.9.3 Alternatives Studied in Detail

Several feasible alternatives were identified—one that follows the WWE corridor from Midpoint to point 8c, a route to avoid sensitive cultural resources, and another to minimize impacts to the IDANG OCTC. The Route Alternatives represent the result of discussions with multiple FOs of the BLM and resultant deviations to avoid identified resources within each FO area. Management common to all alternatives includes the need to meet the requirements of P.L. 103-64 by way of compensatory mitigation.

Alternative 8A (8, 8j, 8c)

Alternative 8A was developed to route the transmission line within or parallel to the WWE corridor or projected WWE corridor where possible. However, Alternative 8A leaves the WWE corridor/projected WWE corridor for more than 13 miles in the Hagerman area to maintain separation from existing transmission lines. This alternative is 53.6 miles long, compared to 51.9 miles for the corresponding portion of the Proposed Route.

From the Midpoint Substation, this alternative would extend due west passing approximately 3.5 miles north of Wendell, 5.5 miles south of Gooding, and 1 mile north of Hagerman through extensive residential development. The route crosses I-84 (MP 19.6) approximately 4 miles east of Hagerman, leaving the WWE corridor or projected WWE corridor to maintain separation from existing 230-kV lines and the existing 500-kV Summer Lake – Midpoint line. At the Gooding/Twin Falls County line (MP 26.6), the route would cross the Snake River on BLM-managed land less than 0.5 mile north of Hagerman Fossil Beds National Monument and continue west across areas of extensive wind energy development to the Twin Falls/Elmore County line (MP 31.2), where it rejoins the WWE corridor. The route turns northwest MP 36.2, joining an existing transmission line corridor. The alternative would parallel existing transmission lines and the Snake River across Black Mesa and then the Snake River and I-84 between MP 46 to MP 47, less than 1.5 miles northeast of Glenns Ferry. Between MPs 32.8 to 34.1, 36.2 to 38.0, at MP 43, and from MPs 43.3 to 45.6, Alternative 8A would cross VRM Class I land within a WWE corridor. This alternative would continue to follow the existing transmission corridor until it would rejoin the Proposed Route (point 8c). This alternative would follow existing transmission lines for almost its entire length.

Alternative 8A would not be in conformance with the management direction provided in the Jarbidge RMP. Amendments would be required to modify the surface disturbance restriction to leave a buffer of 330 feet around the Oregon NHT, to modify VRM classes, and to modify other avoidance zones to allow the ROW. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment and Appendix G provides the analysis and rationale for the visual resource amendments.

Alternative 8B (8d, 8e, 8k, 11)

Alternative 8B was originally identified by the Proponents as its Proposed Route; however, the communities of Kuna and Melba expressed strong opposition to this route when it was proposed. The City of Kuna (which is crossed by Alternative 8B) conducted an in-house study and commissioned an outside study of the effects of the then Proposed Route on the communities (ECS 2009; City of Kuna 2009a). The studies contend this route (now Alternative 8B) would affect long-term growth potential by altering the ongoing comprehensive planning process and associated development patterns. Potential effects are described in Sections 3.4 – Socioeconomics and 3.17 – Land Use and Recreation. Representatives of Melba, Kuna, Ada County, the Proponents, and BLM have worked collaboratively to reach a mutually acceptable solution. This resulted in the Proponents proposing a route that follows the existing 500-kV Summer Lake – Midpoint line across the SRBOP, avoiding the areas of concern identified by Kuna and Melba. This alternative is 45.8 miles long, compared to 45.3 miles for the corresponding portion of the Proposed Route.

Alternative 8B begins at MP 85.3 (point 8d) of the Proposed Route in Elmore County. It proceeds northwest along the alignment of the Proposed Route to MP 90.5 (point 8c). It then continues northwest for another 1 mile, crossing the existing 500-kV Summer Lake – Midpoint line, before turning west parallel to the existing 500-kV line approximately 4 miles, and then northwest adjacent to an existing low voltage transmission line for about 6 miles. The alternative diverges west from the existing low-voltage line approximately 1.5 miles south of the Idaho State Penitentiary, and at MP 23.3 it turns due west, crossing the Union Pacific Railroad (UPRR) and crosses nearly 5 miles within the city of Kuna, including existing and planned subdivisions, and BLM-managed lands currently under consideration for inclusion in the SRBOP. Between MP 29 and MP 32, the route crosses Kuna Butte before turning generally southwest passing south of Power Butte and McElroy Butte and less than 0.75 mile north of the community of Melba. Between MP 34 and MP 41, the alternative would be located adjacent to roadways and in proximity to residences. At MP 39.8, the route crosses SR 45, the Snake River, and SR 78 before entering the expanded Hemingway Substation. Of its 45.8-mile length, 31.3 miles would be Greenfield and 14.5 miles would parallel existing transmission lines.

Consultation with the IDANG indicates their preference for a route that avoids the Alpha Maneuver Sector of the OCTC. Alternative 8B would accommodate the IDANG concerns.

Alternative 8B would not be in conformance with the management direction provided in the Kuna MFP for utilization of existing corridors and restrictions near historic sites. Table 2.2-2 describes the management direction, the associated amendments, and the

sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment.

Alternative 8C (8d, 8k)

Alternative 8C was originally a portion of the Proposed Route. It was changed to an alternative in this area because it would cross the planned expansion of the Mayfield subdivision. It is kept as a viable alternative because the comparable portion of the Proposed Route is of similar length and impacts a similar amount of private land. This alternative is 6.4 miles long, compared to 6.5 miles for the corresponding portion of the Proposed Route.

The route proceeds northwest along the WWE corridor or projected WWE corridor approximately 4 miles, and then turns west an additional 2.4 miles, joining Alternative 8B (point 8k). This alternative would parallel an existing transmission line for 4.8 miles of its 6.4-mile length.

Alternative 8C would not be in conformance with the management direction provided in the Kuna MFP for utilization of existing corridors and restrictions around historic sites. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment.

Alternative 8D (8r.1, 8r.2, 8r.3)

Consultation with the IDANG indicates their preference for a route that avoids the Alpha Maneuver Sector of the OCTC. Alternative 8D would accommodate the IDANG concerns. This alternative is 8.1 miles long, compared to 6.9 miles for the corresponding portion of the Proposed Route. The IDANG also recommends that the transmission structures have lights to avoid collisions during aircraft training exercises.

This alternative begins at the east boundary of the Alpha Maneuver Sector. At this point, the transmission line would be located on the existing Summer Lake to Midpoint 500-kV structures or on new structures if the existing ones are not adequate to support the proposed conductor. The existing circuits would be relocated to a parallel 4.7-mile-long segment offset approximately 1,500 feet to the north to maintain the reliability separation distance. This alternative would therefore avoid the Alpha area but would still be within the SRBOP.

Alternative 8D would not be in conformance with the management direction provided in the SRBOP RMP for sensitive plant habitat and for placing the transmission outside of the designated utility corridors. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments.

Alternative 8E (8h, 9q, 9r, 8i)[4]

Alternative 8E was proposed by BLM to avoid the Halverson Bar and Wees Bar Non-motorized Areas and a National Register Historic District. The portion of the Proposed Route that crosses the north end of the Historic District and the Snake River would be

[4] Alternatives 8E and 9D/9F are the same between reference points 9q and 9r – only one of the Alternatives will follow this alignment

located within an area designated by the BLM as Non-Motorized (i.e., no vehicle travel allowed). Alternative 8E would avoid this Non-Motorized land designation and minimize the impacts to cultural sites. This alternative is 18.3 miles long, compared to 7.0 miles for the corresponding portion of the Proposed Route.

Alternative 8E would leave the Proposed Route at point 8h near MP 114, proceeding south, following an existing 138-kV transmission line for approximately 8.2 miles. The route would turn to the west-southwest, crossing a National Register Historic District and the Snake River approximately 2.75 miles south of the Swan Falls recreation area, adjacent to an existing transmission line. On the west side of the river, the route would turn to the northwest, staying west of Sinker Butte, and continuing west, rejoining the Proposed Route in the Con Shea Basin (point 8i). The portion of Alternative 8E across the Snake River to just south of the Con Shea Basin (point 9q to 9r) would follow the same alignment as portions of Alternatives 9D and 9F. However, both Alternative 8E and Alternatives 9D/9F could not be selected for construction, as only one route could be constructed in this area.

Alternative 8E would not be in conformance with the management direction provided in the SRBOP RMP for sensitive plant habitat, utilization of existing corridors, and protections for visual resources. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resources amendment.

2.4.10 Segment 9 – Cedar Hill to Hemingway

2.4.10.1 General Description and Issues

One single-circuit 500-kV transmission line is proposed between the proposed Cedar Hill and the existing Hemingway Substations. The line would be constructed using 500-kV single-circuit lattice steel structures between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-11 provides details on the transmission line route between the Cedar Hill and Hemingway Substations. Segment 9 is 162.2 miles long and therefore would need two optical signal regeneration sites along its route. Final locations for regeneration stations would be determined after detailed design engineering is completed.

Key factors considered in routing this segment were agricultural and residential development in Owyhee County, visual resources, the Jarbidge and Owyhee Military Operations Areas, Saylor Creek Air Force Range, Balanced Rock County Park, Bruneau Dunes State Park, the Cove Non-Motorized Area, sage-grouse leks and priority habitat, and Salmon Falls Creek WSR.

In the Magic Valley, the Proposed Route is within or parallel to the WWE corridor for only 15.0 miles out of a total Proposed Route length of 78.1 miles. However, in the western half of Segment 9, the WWE corridor was one of the primary elements used for routing the Proposed Route. In the Saylor Creek area, the Proposed Route is within the WWE corridor or the projected WWE corridor for 12.9 miles out of a total Proposed Route length of 29.1 miles, and from the Saylor Creek Air Force Range west, the Proposed Route is within the WWE corridor or the projected WWE corridor for

48.0 miles out of a total Proposed Route length of 52.4 miles. In total, Segment 9 utilizes 53.9 miles of WWE corridor.

2.4.10.2 Proposed Route (9a, 9b, 9c, 9f, 9h, 9i, 9j, 9k, 9l, 9m, 9n, 9o, 11)

The 162.2-mile-long Proposed Route proceeds generally west through public and private rangeland along the WWE corridor or projected WWE corridor from the Cedar Hill Substation. Near MP 8, the route deviates slightly north, and then west again, to minimize impacts to an existing CAFO about one mile south of the Twin Falls Military Reservation. The route crosses US 93 at MP 17.7 and then continues west, turning northwest at MP 27.9, parallel to the east side of Salmon Falls Creek and adjacent to an existing 138-kV transmission line for about 5 miles. At MP 33, the Proposed Route crosses the Salmon Falls Creek at Lilly Grade adjacent to an existing single-phase 34.5-kV distribution line just north of the Salmon Falls Creek WSA and a VRM I designated viewshed approximately 6 miles south of the community of Castleford. The area crossed is part of an Area of Critical Environmental Concern (ACEC), a Recreation portion of an eligible WSR. The route was revised between Draft and Final EIS to cross below the Wild portion of the eligible WSR. Several raptor nest buffers are crossed as the route continues northwest through the Bruneau Desert. At MP 46.6, the route enters Owyhee County and turns to the north between areas of irrigated agriculture along the Twin Falls County/Owyhee County line for about 10 miles before turning northwest at MP 56.5, then into Elmore County (MP 63.4). Between MP 46.6 and MP 63.4, the Proposed Route would be just inside the east boundary of the general Jarbidge Military Operations Area. Within the Military Operations Area, structures normally cannot extend more than 100 feet above ground level. Consultation between Twin Falls County and the U.S. Air Force has determined that this height restriction would not apply to the Gateway West Project and this minor encroachment is acceptable (Postema 2010). However, the Air Force recommends that the transmission structures be equipped with special lights to prevent collisions during training exercises (see Section 2.1.1).

At MP 79.0, the Proposed Route joins the designated WWE corridor northwest of Deadman Flat, and would enter the SRBOP at MP 88.0. The Proposed Route parallels the northern boundary of the Saylor Creek Air Force Range for approximately 11.5 miles, passing through the restricted area in the northwest corner of the range between MP 91.2 and MP 95.6, less than 0.25 mile south of Bruneau Dunes State Park. Consultation between representatives of the BLM, U.S. Air Force, Idaho Department of Parks and Recreation, and the Proponents has determined that the location of the Proposed Route within the restricted Military Operations Area and just to the south of Bruneau Dunes State Park is acceptable with micro-siting and mitigation. As with the Jarbidge Military Operations Area, the Air Force recommends that the transmission structures be equipped with special lights to prevent collisions during training exercises (see Section 2.1.1). From this point, the Proposed Route continues generally southwest, leaving the WWE corridor and the projected WWE corridor between MP 97.8 to MP 102.3 to cross wetlands and agricultural areas along the Bruneau River and the Bruneau Valley.

On the west side of the Bruneau Valley, the route turns northwest, crosses SR 51 at MP 104.1, and then continues northwesterly on the southwest side of the Bruneau

River, C.J. Strike Reservoir, and SR 78. Between MP 102.3 to the Hemingway Substation, the Proposed Route follows the WWE corridor on BLM-managed land but frequently changes direction on private segments to avoid rural residences, the small communities of Murphy and Oreana and, as much as possible, cultivated lands. The route re-enters the SRBOP between MP 142.4 to MP 146.2 and again between MP 151.5 to MP 152.6, mainly within the WWE corridor on BLM-managed land, and then continues north and west into the Hemingway Substation.

The Proposed Route would not be in conformance with the management direction provided in the Jarbidge and SRBOP RMPs or the Twin Falls and Bruneau MFPs. The Jarbidge RMP would require amendments to allow the ROW to cross the ACEC and the VRM Class II area. The SRBOP RMP would need an amendment to allow the Project outside identified utility corridors. Management common to all alternatives includes the need to meet the requirements of P.L. 103-64 by way of compensatory mitigation. The Twin Falls MFP would need amendments to allow the ROW outside of existing corridors and to allow a single-use visually altering action. The Bruneau MFP would require VRM classification amendments. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F discusses the associated amendments and Appendix G provides the analysis and rationale for visual resources amendments. However, the BLM has concluded that the Proposed Route along Segment 9 could not be approved unless the river is found not to be suitable as a WSR.

2.4.10.3 Alternatives Studied in Detail

Alternative 9A (9a, 9c)

Alternative 9A was originally identified by the Proponents as the Proposed Route. Based on consultation with local landowners and residents concerned about impacts to irrigated agriculture and dairies, BLM representatives and the Proponents identified a new route that has been adopted by the Proponents as proposed. However, Alternative 9A (formerly the Proposed Route) remains a feasible alternative that warrants detailed analysis. This alternative is 7.7 miles long, compared to 7.8 miles for the corresponding portion of the Proposed Route. The Proposed Route would be Greenfield Route. Alternative 9A would follow an existing 345-kV line for approximately 3 miles.

The alternative is located about 2 miles south of Hub Butte in Twin Falls County generally parallel to the current Proposed Route.

Alternative 9A would not be in conformance with the management direction provided in the Twin Falls MFP for utilization of existing corridors. Table 2.2-2 describes the management direction, the associated amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment.

Alternative 9B (9d, 9m, 9f)

Alternative 9B was developed to follow a nearby WWE corridor and to parallel existing transmission line corridors. This alternative is 52.3 miles long, compared to 49.1 miles for the corresponding portion of the Proposed Route.

Alternative 9B would depart from the Proposed Route about 5 miles south of Castleford (point 9d) This alternative would follow an existing 138-kV transmission line 21.6 miles,

parallel to the west side of Salmon Falls Creek at a distance ranging between 1 to 4 miles. It would then turn northwest, still within the WWE corridor or projected WWE corridor and generally parallel to an existing transmission line on the west side of the Snake River before crossing the Twin Falls/Elmore County line (MP 29.5) and an area of existing wind energy development (MP 25 to MP 31). At MP 33.5, the route would turn due west, crossing Rosevear Gulch and an area of irrigated agriculture in Deadman Flat, before rejoining the Proposed Route just west of the Owyhee/Elmore County line (point 9f).

Alternative 9B would not be in conformance with the management direction provided in the Jarbidge RMP for VRM Class I areas. Table 2.2-2 describes the management direction, the proposed amendment, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendment and Appendix G provides the analysis and rationale for the visual resources amendment.

Alternative 9C (9d, 9m, 9e)

Alternative 9C was originally identified by the Proponents as the Proposed Route. Based on consultations with local landowners and residents concerned about impacts to irrigated agriculture and dairies, County representatives and the Proponents identified a new route that has been adopted by the Proponents as proposed. Alternative 9C (formerly the Proposed Route) remains a feasible alternative that warrants detailed analysis. This alternative is 14.4 miles long, the same length as the corresponding portion of the Proposed Route.

Alternative 9C follows an existing 138-kV transmission line for 9 miles in a northerly direction along the same alignment as Alternative 9B to point 9m (see above). The alternative is parallel and east of an ACEC in Salmon Falls Creek, and is within 3.5 miles of the community of Castleford to the west. At MP 9, the alternative crosses the existing transmission line and Salmon Falls Creek (below the ACEC), and turns west, passing along the east then the north side of Balanced Rock County Park, and adjacent to the southern end of a CAFO. The alternative continues west approximately 5 miles across the north end of Blue Gulch, before meeting the Proposed Route (point 9e).

No land use plan amendments would be required for this alternative.

Alternative 9D (9g, 9n, 9o, 9p, 9q, 9r, 9k)

Alternative 9D is a variant of an alternative identified by the Owyhee County Task Force. Avoidance of private lands and maximizing the use of public land was the primary sitting criteria. The specific alignment was developed through consultation between the BLM representatives and the Proponents based on information originally provided by the Task Force. This alternative substantially deviates from the designated WWE corridor (which is followed by the Proposed Route) and would cross 47.9 miles of the SRBOP (thereby requiring an RMP amendment). Alternative 9D is 60.1 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

From point 9g, Alternative 9D would proceed northwest paralleling the north side of Bruneau River, crossing SR 51 at MP 5.4, approximately 1.5 miles north of Bruneau. At MP 7, the alternative turns west, avoiding agricultural land along the northern shore of C.J. Strike Reservoir (Bruneau Arm) before crossing the Narrows portion of the

reservoir and a small eastern section of the Cove Non-Motorized Area. The alternative turns north, crossing SR 78 at MP 13.6, paralleling the highway for 1.5 miles, before crossing it again at MP 15.1. The alternative generally follows an existing 138-kV transmission line, turning north approximately 1 mile east of Rimrock High School, and crossing the Snake River approximately 0.5 mile downstream from C.J. Strike Dam. North of the Snake River, the alternative continues to parallel the existing 138-kV line, turning west and then north away from the existing line at MP 21.3 to avoid encroachment into the restricted Class D airspace around Mountain Home AFB. At MP 25.9, the route rejoins the 138-kV line and continues to parallel it north approximately 21 miles through the SRBOP. Between MP 31.7 and MP 43, the alternative would be just outside the southwest boundary of the OCTC and the OCTC low-level flight operations area. At point 9q, the route turns west, crossing the Snake River adjacent to an existing 138-kV line, along the same alignment as Alternative 9D west of Sinker Butte to point 9r. From there, the route turns southwest for approximately 5 miles, rejoining the Proposed Route (point 9k) 2.4 miles northwest of Murphy.

Except for minor detours to avoid agricultural land, the alternative parallels the transmission lines from the dam primarily west on the north side of the Snake River. On the south side of the Snake River, the alternative would cross a BLM-designated non-motorized area. The majority of this alternative (47.9 miles) is within the SRBOP.

Alternative 9D would not be in conformance with the management direction provided in the Jarbidge RMP for non-motorized areas and visual resources, and the SRBOP RMP for visual resources, sensitive plant habitat, utilization of existing corridors, and Oregon NHT protections. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resources amendments.

Alternative 9E (Revised) (9g, 9s, 9i, 9j, 9t, 9l)

Alternative 9E (Revised) was originally identified by the Owyhee County Task Force and recommended by Owyhee County for detailed analysis although it is not preferred by the County. The primary County siting criteria have been avoidance of private land and maximizing of the use of public land. The specific alignment has been developed through consultation between Owyhee County Task Force and BLM representatives and the Proponents. The BLM has modified the northern portion of this alternative to avoid impacts to sage-grouse leks and preliminary priority habitat and to private land. This alternative is 70.6 miles long, compared to 61.4 miles for the corresponding portion of the Proposed Route.

Beginning at MP 95.8 of the Proposed Route, Alternative 9E proceeds south for approximately 5 miles outside the western edge of restricted airspace at Saylor Creek Air Force Range, and then turns west south of Hot Spring, crossing the Bruneau River at MP 5.6 and entering crucial big game winter range. The alternative crosses Highway 51 at MP 15.7, continuing northwest along the foothills of the Owyhee Range. At MP 42.6, the alternative crosses Castle Creek. Here, the revised route takes a more northerly alignment to avoid sage-grouse priority habitat to the northwest, crossing private land in the Hart Creek and Pickett Creek areas 3 to 4 miles west of the community of Oreana. At MP 52.8 (point 9i), the alternative rejoins the Proposed Route

within the WWE corridor, and follows the Proposed Route alignment for approximately 8.5 miles, mostly within the WWE corridor or projected WWE corridor, across a small part of the SRBOP. At point 9j, the alternative leaves the Proposed Route in a more westerly direction, crossing Rabbit Creek (MP 64.4) approximately 2.4 miles southwest of Murphy. Crossing West Rabbit Creek at MP 66.7, the alternative joins Alternative 9I (see below) for approximately 3 miles, rejoining the Proposed Route at point 9l.

Alternative 9E would not be in conformance with the management direction provided in the SRBOP RMP for sensitive plant habitat or utilization of existing corridors. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments.

Alternative 9F (9g, 9h, 9o, 9p, 9q, 9r, 9k)[5]

This alternative was proposed by the BLM in order to avoid the Cove Non-Motorized Area west of C.J. Strike Reservoir. As discussed above, Alternative 9D was identified by the Owyhee County Task Force and recommended by Owyhee County for detailed analysis. Avoidance of private lands and maximizing the use of public land has been the primary sitting criteria used by Owyhee County. The specific alignment for Alternative 9D was developed through consultation between the Owyhee County Task Force, the Proponents, and BLM. However, Alternative 9D crosses a small area of BLM Non-Motorized Area. The crossing of the Non-Motorized Area by Alternative 9D would not conform with BLM management objectives. Therefore, Alternative 9F is routed to avoid this area, and preserves all but approximately 18 miles of the Alternative 9D route preferred by Owyhee County. This alternative is 63.3 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

From reference point 9g, Alternative 9F would proceed to the west, following the Proposed Route and the WWE corridor for approximately 18 miles. At reference point 9h, just south and west of C.J. Strike Reservoir dam, the route turns to the north and then northeast for approximately 3 miles, crossing SR 78 at MP 19.6, about 1 mile west of Rimrock High School, and then joining Alternative 9D (point 9p) before crossing the Snake River. The remainder of Alternative 9F is coincident to Alternative 9D.

Alternative 9F would not be in conformance with the management direction provided in the SRBOP RMP for visual resources, sensitive plant habitat, utilization of existing corridors, and Oregon NHT protections. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resource amendments.

Alternative 9G (9g, 9n, 9o, 9p, 9k)

Alternative 9G is another variation recommended by the BLM to the alternative route proposed by Owyhee County (Alternative 9D). This alternative is generally coincident with Alternative 9D, but crosses the Snake River to the south to avoid potential routing issues with the Segment 8 crossing of the Wees Bar and Halverson Bar Non-Motorized Areas (see above). Alternatives 9D/9F would take a more northerly path than

[5] Alternatives 8E and 9D/9F are the same between reference points 9r.4 and 9r.5 – only one of the Alternatives will follow this alignment

Alternative 9G (Alternatives 9D/9F would be located in the same location as Alternative 8E). As two separate lines cannot be placed in this single location, if Alternative 8E is selected, Alternatives 9D/9F would no longer be feasible. Alternative 9G is being evaluated in addition to 9D and 9F because it avoids this conflict. This alternative is several miles south of the Alternative 8E alignment, which would allow both Alternatives 9G and 8E to be selected. This alternative is 57.8 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

Alternative 9G follows Alternative 9D for the first 41 miles (see above). At reference point 9p, Alternative 9G turns to the west, crossing a National Register Historic District and the Snake River near MP 49.6, approximately 4 miles south of Sinker Butte. The alternative crosses Sinker Creek at MP 45.5, and then continues north and west, rejoining the Proposed Route 2.4 miles northwest of Murphy (point 9k). Like Alternative 9D, Alternative 9G would cross the Cove Non-Motorized Area.

Alternative 9G would not be in conformance with the management direction provided in the Jarbidge RMP for visual resources, or the SRBOP RMP for non-motorized areas, VRM Class II areas, sensitive plant habitat, utilization of existing corridors, and Oregon NHT protections. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resource amendments.

Alternative 9H (9g, 9h, 9o, 9p, 9k)

Alternative 9H was identified by the BLM to avoid both the Cove Non-motorized Area and the common alignment with Alternative 8E near Swan Falls and Sinker Butte. The conditions leading to evaluation of Alternative 9H are the same as those discussed for Alternatives 9D, 9F, and 9G. The primary differences between Alternative 9H and Alternatives 9D/9F/9G are the alignment of the first 18 miles and last 15 miles of the route. Like Alternative 9F, Alternative 9H avoids the Cove Non-Motorized Area west of C.J. Strike Reservoir. In addition, like Alternative 9G, Alternative 9H avoids the co-location conflict with Alternative 8E that affects Alternatives 9D and 9F (i.e., if Alternative 8E is selected, Alternatives 9D and 9F would no longer be feasible). This alternative is 61.0 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

From reference point 9g, Alternative 9H is coincident to Alternative 9F (see above) for 45.7 miles. At points 9p, Alternative 9H turns west and follows the alignment of Alternative 9G (see above) the remaining 15.2 miles, rejoining the Proposed Route northwest of Murphy.

Alternative 9H would not be in conformance with the management direction provided in the SRBOP RMP for visual resources, sensitive plant habitat, utilization of existing corridors, and Oregon NHT protections. Table 2.2-2 describes the management direction, the associated amendments, and the sections of the EIS where the effects are analyzed. Appendix F provides the associated amendments and Appendix G provides the analysis and rationale for the visual resources amendments.

2.4.11 Segment 10 – Midpoint to Cedar Hill

2.4.11.1 General Description and Issues

One single-circuit 500-kV transmission line is proposed between the Midpoint and Cedar Hill Substations. The line would be constructed using 500-kV single-circuit lattice steel structures between 145 and 180 feet tall (Appendix B, Figure B-3). Appendix A, Figure A-12 shows the proposed Segment 10 route between Midpoint and Cedar Hill. The Midpoint Substation is described under Segment 8 and the Cedar Hill Substation is described under Segment 9.

The Proposed Route is within the WWE corridor or projected WWE corridor for 30.6 miles out of a total route length of 34.4 miles. For most of this length, the Proposed Route would be immediately adjacent to the existing 345-kV line. Issues for this segment focused on avoiding impacts to agricultural uses and the Minidoka National Historic Site.

Segment 10 would not need an optical signal regeneration site along its route.

2.4.11.2 Proposed Route (8, 10a, 10b, 9)

The 34.4-mile-long Proposed Route exits the existing Midpoint Substation parallel to an existing 345-kV line and within the designated WWE corridor in a southeasterly direction for 11 miles. At this point, the route turns south, crossing the North Side Main Canal (MP 13.5), before turning southeast and then south again to rejoin the WWE corridor near MP 18.8. From MP 20.5 to the proposed Cedar Hill Substation the Proposed Route again parallels the existing 345-kV line across an area of extensive irrigated agriculture. The route continues south across the western end of Goose Lake and the UPRR (MP 19.1), a CAFO, and SR 25 (MP 20.9) approximately 1.8 miles west of the community of Eden. The alternative then crosses I-84 to the west of Skeleton Butte at MP 23.0, the Snake River (Jerome County/Twin Falls County line) at MP 24.3, and US 30 at MP 26.1, before entering the proposed Cedar Hill Substation at MP 34.4. The Proposed Route follows the alignment of the planned SWIP. If that project is constructed, it would serve in place of the Gateway West Segment 10 Proposed Route. Only one transmission line would be constructed under any circumstances.

No land use plan amendments would be required for the Segment 10 Proposed Route.

2.4.11.3 Alternatives Studied in Detail

No alternatives other than the Proposed Route were studied in detail for Segment 10.

2.4.12 Alternatives Eliminated from Detailed Study

2.4.12.1 Segment 1E

East of Laramie Mountains Alternative

The East of Laramie Mountains Alternative was initially considered as an easterly alternative to the original Proposed Route through the Central Laramie Mountains. This alternative is 149 miles long and is located at the east edge of the Laramie Mountains. This route would avoid the Shirley Basin. From Windstar Substation, this route would proceed southeast, crossing the Burlington Northern Railroad tracks, the North Platte River, and I-25. Immediately south of I-25, the route parallels to the north of 230-kV and 115-kV transmission lines, going into and out of crucial big game winter range. At MP 33.4, the route becomes predominantly southerly, staying just west of the Platte County

border, crossing into Albany County and the Medicine Bow-Routt NFs at MP 44.4, then out of the NFs and into Platte County at MP 47.4. The route continues in and out of crucial big game winter range, turning slightly southeast at MP 56.1, crossing in and out of the Medicine Bow-Routt NFs. The route turns west southwest at MP 82.3, entering Albany County at MP 88.0, and turning west to northwest at MP 90.2 near Red Mountain. Continuous crucial big game range is present between MPs 78.1 and 96.1. The route passes just north of Wheatland Reservoir No. 2 and crosses the Laramie River at MP 106.9. Continuing west, the route passes through planned and proposed wind farm areas and back into crucial big game winter range. The route enters Carbon County at MP 130.6. Several raptor nest buffers are crossed in the last several miles of the route. At MP 143.6, the route would intersect with the Segment 1E, which is no longer being considered, and continue west, passing just north of the Medicine Bow River and into Aeolus Substation (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 48.5 miles longer than the Proposed Route;
- Crosses 56.1 more miles of big game crucial range;
- Requires construction on 10.0 more miles of steep slopes (> 15 percent); and
- The majority of the route would be Greenfield, and would therefore result in substantially more disturbance along the entire corridor, relative to the considered routes.

Fetterman Road Alternative

The Fetterman Road Alternative, which would have replaced a portion of the Central Laramie Mountain Alternative, was not included for detailed analysis in the original siting analysis. It was initially considered in an attempt to minimize visual impacts from the line by placing the line within a valley and along an existing road. This route, in conjunction with the Central Laramie Mountain Alternative, would avoid the Shirley Basin. However, upon determining that the visual setting included portions of the old stage route to Fort Fetterman with trail segments that are eligible for the NRHP, the Proposed Route was moved west out of the stage road setting. Following scoping, local landowners raised issues along this route. Based on landowner interest in this area and a request by the Office of the Governor of Wyoming (OGW 2009) additional analysis, public comment, and further consultation with the Office of the Governor, it was once again eliminated from detailed analysis.

This alternative would exit the Windstar Substation and run eastward, north of the North Platte River, for approximately 4 miles. It then angles generally southward, crossing the North Platte River just west of Careyhurst, crossing the I-25 corridor, and proceeding south through the Medicine Bow-Routt NFs, paralleling just west of the Rock Creek and Fort Fetterman Road, to a location approximately 7 miles west of Garrett. At this point the alternative route turns and heads southwest (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Impacts 0.3 mile more historic trail buffer than the portion of the central Laramie Mountains alternative it would have replaced, and it closely parallels the Rock Creek and Fort Fetterman Road;
- Crosses 21.1 miles of big game crucial winter range;
- Crosses 17.7 miles of core sage-grouse habitat; and
- There are more raptor nests are in proximity to this route than the Proposed Route.

Central Laramie Mountains Alternative

The Central Laramie Mountains Alternative was originally the Proposed Route for the 1E corridor, which is no longer being considered. It would begin at the existing Windstar Substation located about 3.5 miles east of the community of Glenrock in Converse County, just north of the Dave Johnston Power Plant, and extends to the planned Aeolus Substation. From Windstar, the line would proceed predominantly south for approximately 54 miles, through Converse and Albany Counties crossing the Burlington Northern Railroad, the North Platte River, the Chicago and Northwestern Railroad, and I-25. Southeast of this highway at MP 7.6, the line crosses into the uplands in the vicinity of Brighton Canyon and east of Little Box Elder Creek. The route continues south parallel to Windy Ridge to MP 27, where it crosses into the Laramie Mountains, which it traverses for approximately 15 miles, crossing into Albany County at MP 32. This segment continues south, running parallel to the Rock Creek and Fort Fetterman Road, which is approximately 4 miles to the east. The route alternative continues south to the vicinity of the confluence of Sheep Creek and Mule Creek. At MP 54 near Twenty-two Mile Draw, the route turns southwest for about 12.9 miles before turning westward, and then crossing from Albany County into Carbon County at MP 71.1. From the county line, the route continues westward across Greasewood Flats crossing SR 487 at MP 76.5. It then proceeds west, south of the Freezeout Mountains and north of the Medicine Bow River to the planned Aeolus Substation (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is entirely a Greenfield route, and would therefore result in substantially greater disturbance, relative to the considered routes;
- Contains scenic views in the Laramie Mountains outside of the governor's corridor;
- Crosses a sage-grouse core area;
- Crosses 18.1 miles of big game crucial winter range;
- Crosses 11.3 miles of forested habitats; and
- There are ferruginous hawk and golden eagle nests located in proximity to this route.

Medicine Bow Alternative

The Medicine Bow Alternative was identified as an alternative at the southern end of the central Laramie Mountain routes, resulting in a more direct route to the Aeolus Substation. It extends from the southern end of the Fetterman Road Alternative through Albany County, across the Thunder Basin Flats, crossing US 487, running along the southern foot of the Freezeout Mountains through sage-grouse core area, and terminating at the Aeolus Substation near the Medicine Bow River (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is entirely a Greenfield route and would therefore result in substantially greater disturbance, relative to the considered routes;
- Crosses 12.6 miles of big game crucial winter range;
- Crosses in proximity to raptor nests; and
- Crosses two sage-grouse lek 0.65-mile buffers.

2.4.12.2 Segment 1W

Shirley Basin Alternative

The Shirley Basin Alternative was developed in an attempt to avoid crossing the Bates Hole MA with a new 230-kV transmission line; however, avoidance of Bates Hole could not be achieved without substantially affecting several other environmental resources. This alternative includes a 230-kV line on steel H-frame structures that would substitute for Segment 1W(a), described above. The proposed 230-kV route would exit the Windstar Substation heading generally west, running north of the North Platte River and the I-25 corridor. The alternative passes north of Glenrock, Casper, and the Natrona County International Airport, and then begins to head southwest, crossing US 20/26 and traversing Emigrant Gap Ridge. This alternative would continue southwest for approximately 27 miles until meeting US 220 just north of the Pathfinder NWR. This alternative would then turn south and parallel the Pathfinder Reservoir and NWR about 6 to 7 miles to the west. Next, the alternative would loop east, passing south of the Seminoe Mountains, crossing Seminoe Reservoir and State Park, passing south of the Shirley Mountains, and terminating at the Aeolus Substation near the Medicine Bow River (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 72 miles longer than the Proposed Route, affecting substantially more resources than the Proposed Route;
- Traverses historic trail buffers, whereas the Proposed Route avoids them;
- Passes through Seminoe State Park, whereas the Proposed Route would avoid this area;
- Crosses portions of the Natrona, Greater South Pass, and Hann sage-grouse core areas; and
- Encroaches upon two sage-grouse lek 0.65-mile buffers.

2.4.12.3 Segment 2

Seven-Mile Alternative

The Seven-Mile Alternative was initially considered because it would follow an existing 230-kV utility corridor that is also a WWE corridor and a BLM-designated ROW corridor, and it is a relatively direct route between the Aeolus Substation and where the Proposed Route, for the Draft EIS, resume traveling in a westerly direction, following its southward routing west of the Aeolus Substation. However, as proposed, following the alignment for this Alternative would mean that both Gateway West and Gateway South would exit the planned Aeolus Substation in a southwesterly direction and both must avoid conflicts with PacifiCorp's existing Seven Mile Hill Wind Energy Project. Based on the need for two planned transmission lines to exit Aeolus, the Proponents proposed that Gateway West proceed due west and then south along a route suggested by the BLM IDT (this routing was later modified as discussed in Chapter 1, Section 1.1.1). Under that scenario, Gateway South, if approved, would exit the Aeolus Substation in a southerly direction parallel to the existing 230-kV transmission line and would be about 2,250 feet from the nearest wind turbine. This distance would allow adequate distance between the transmission line and closest turbine but not allow enough distance to accommodate a second transmission line. Therefore, this alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Does not allow enough distance to accommodate a second transmission line along this area.

Rawlins Alternative

The Rawlins Alternative was initially considered in order to avoid sage-grouse lek buffers by at least 0.65 mile. It would start approximately 9 miles east of reference point 2f of the Proposed Route (which follows the existing utility corridor and the WWE corridor), diverging south by up to 2 miles (at its farthest point) on a new ROW before rejoining the Proposed Route approximately one mile west of State Highway 789 (see Appendix O). The alternative would avoid one sage-grouse lek 0.65-mile buffer, but would be 0.5 mile longer than the Proposed Route. However, the BLM, the State of Wyoming, and the WGFD indicated they would prefer that the Project follow the existing utility corridor and the WWE corridor, in lieu of creating Greenfield routes in order to avoid every sage-grouse lek 0.65-mile buffer. The BLM IDT therefore eliminated this alternative from detailed study because it does not follow existing utility corridor or the WWE corridor.

2.4.12.4 Segment 3

Tipton Alternative

The Tipton Alternative was initially considered because it follows the WWE corridor more closely than the Proposed Route**.** This alternative diverges from the Proposed Route just west of Wamsutter Rim, and extends generally west along the WWE corridor for approximately 13 miles, passing through Tipton, to meet I-80/US 30 (where it also bisects the Proposed Route). This alternative then crosses to the north side of I-80/US 30 and continues generally west along the WWE corridor and just north of the I-80/US 30 corridor for an additional 17 miles, passing north of Table Rock, crossing Patrick Draw, and rejoining the Proposed Route at a location approximately 2.5 miles northwest of the intersection of I-80/US 30 and Bitter Creek Road (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed:

- The WWE corridor along this route contains extensive development including existing roads, railroads, mining, and oil and gas operations, which present substantial constraints to the design and operation of the Gateway West transmission facilities

2.4.12.5 Segment 4

Rock Springs Alternative

The Rock Springs Alternative was developed to maximize the use of the WWE corridor. This alternative follows the Proposed Route to a location 13.5 miles east of the Green River. The alternative route deviates from the Proposed Route near MP 38 and then follows the WWE corridor for 21.9 miles to the south around the NWR (5 miles to the north) and rejoins the Proposed Route near reference point 4b (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is approximately 6.5 miles longer than the Proposed Route;
- Passes within 0.25 mile of two sage-grouse leks as compared to none along the Proposed Route;
- Crosses 1.1 more miles of trona lease lands than the Proposed Route;
- Requires 14.7 miles more Greenfield ROW than the Proposed Route;
- Crosses 9.0 miles more big game crucial winter range than the Proposed Route;
- Crosses 1.2 miles more VRM Class II lands than the Proposed Route; and
- Crosses 3.4 miles more of historic trail buffers than the Proposed Route.

Southern WWE Corridor Alternative

The Southern WWE Corridor Alternative was initially evaluated in response to the request to consider a route that would follow the WWE corridor along the I-80 corridor. This 266-mile-long alternative is located south of the Proposed Route. At the Green River crossing, the Southern WWE Corridor Alternative would divert south to follow the WWE corridor to the southwest through the checkerboard land towards Evanston, Wyoming. Approximately 60 to 70 percent of the alternative in this portion follows I-80, passing through several miles of land currently used for trona mining. At Evanston, the alternative leaves I-80 and the WWE corridor and proceeds to the northwest through a large wetland south of Woodruff Reservoir, then west into Utah, following existing transmission lines over the Wasatch Mountain Range and into the Salt Lake Valley north of Ogden, Utah. The alternative would then turn north for approximately 45 miles, paralleling existing transmission lines on the east side of I-15, then proceed to the northwest on a route through mostly private agricultural land near the towns of Thatcher, Howell, and Snowville, Utah. Roughly half of this interval parallels I-86. The WWE corridor is rejoined as the alternative crosses into Idaho, continuing northwest, then north before rejoining the Proposed Route in Segment 7 at point 7d (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Does not meet the Proponents' Objectives, as it would neither be feasible to connect to the Populus Substation nor would this alternative allow for the proposed connection between Populus and Borah Substations along Segment 5;
- Is 64 miles longer than the Proposed Route;
- Crosses 136 more miles of private land than the Proposed Route;
- Crosses 131 miles of Utah, including densely populated portions of the Salt Lake Valley; and
- Although 30 miles of the Southern WWE Corridor Alternative would follow the WWE corridor, compared to 2 miles for the corresponding portion of the Proposed Route, the advantage would be negated by the 64 extra miles of total length of this alternative, resulting in substantially greater disturbance compared to the routes considered in detail.

Consolidation/Relocation Alternatives

Figure 2.4-4 shows an area in southwestern Wyoming in the Kemmerer BLM FO that contains important historic, visual, and natural resources. To date, the Proponents and the BLM have proposed a total of seven alternatives in this area. Each alternative was designed to reduce impact on one suite of resources; however, each of these alternatives would result in unavoidable impacts on important resources. These alternatives and their resulting impacts are discussed in the following text.

In response to concerns regarding impacts to historic trails and the inconsistency with the overall land use plan decisions in the Kemmerer RMP, the Kemmerer FO requested that an alternative be considered that lessens the impacts to the view shed by either combining the existing and the proposed transmission lines onto one large structure, or modifying the existing structures to be less intrusive on the viewshed. Specifically, the FO requested:

> *Need to analyze an alternative that would upgrade the line from (A-B-C, 23.5 miles), by installing new non-reflective towers made of dulled or weathering steel, with non-specular wire that could handle existing transmission and include the new proposal under Gateway.*

The area is currently crossed by three single-circuit 345-kV transmission lines: Bridger West (Bridger – Populus #1 and #2, and Bridger – Three Mile Knoll), constructed in 1970 through 1974. The three 345-kV circuits currently carry a maximum load of approximately 2,400 MW. Two lines continue west to Populus while the third turns north in the Cokeville area. These transmission lines were constructed with structure and conductor materials that appear shiny under most lighting conditions compared to the dulled finish material to which the Proponents have committed to for Gateway West.

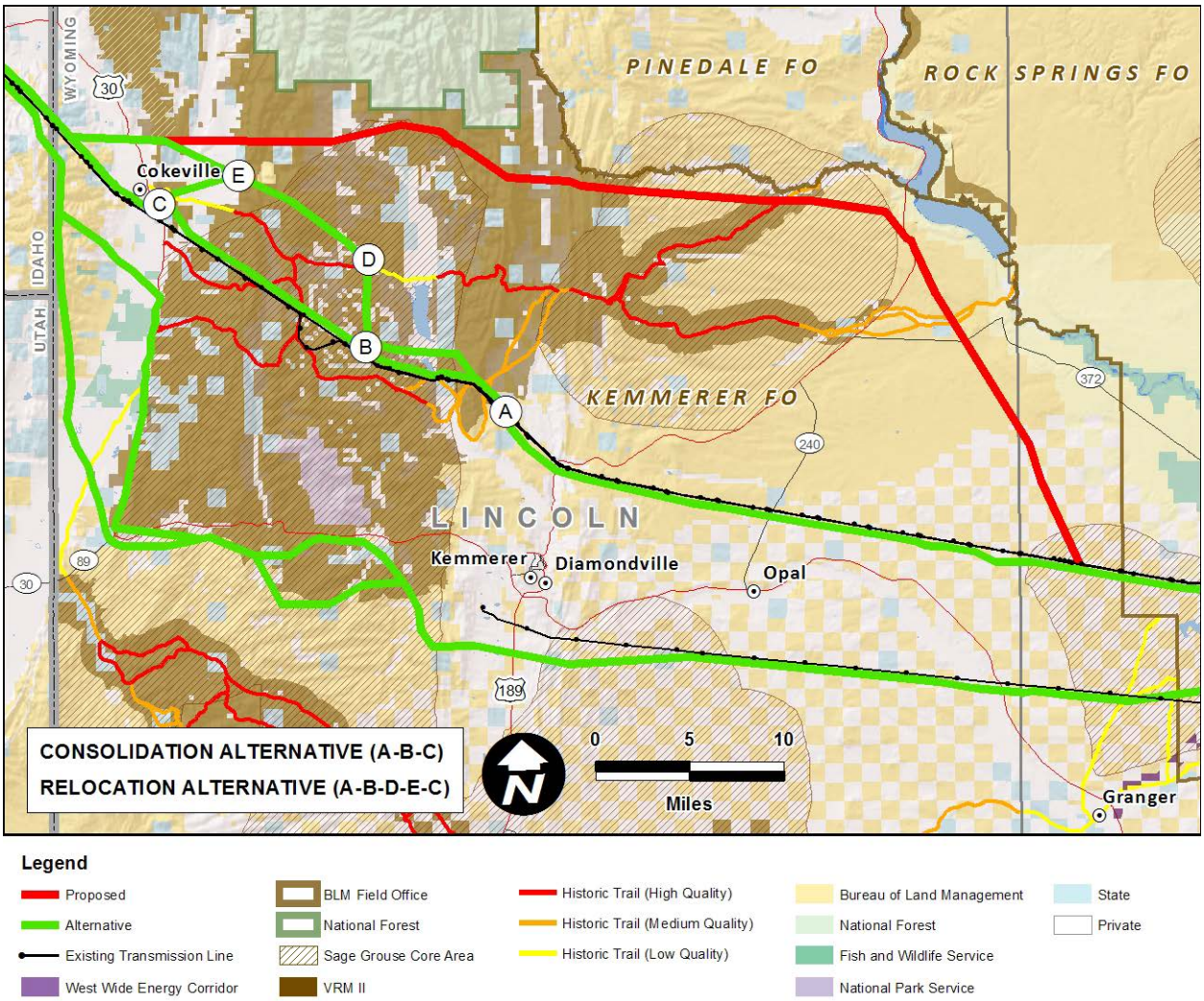


Figure 2.4-4. Consolidation/Relocation Alternatives

The Project originally proposed to carry up to 3,000 MW on a double-circuit 500-kV structure through this area. When combined with energy carried on the three 345-kV structures, the total is about 5,400 MW. While it would be technically feasible to carry this load on one set of double-circuit 765-kV structures through this area, it would be prohibitively expensive for the following reasons:

- The Western Interconnection does not include 765-kV systems, and there are no substations or transformers in the Western grid that could interconnect with this voltage;
- Therefore, to allow for this possibility, new substations would need to be constructed, or existing substations expanded, to accommodate very large new transformers just for this one line. If such a substation or expansion were created near the Jim Bridger Power Plant, then the new 765-kV line would have to be over 150 miles long, from Bridger to Cokeville; and

- A large new substation would have to be built at Cokeville to allow for the 345-kV line that turns north near Cokeville to continue to supply power to the Three Mile Knoll Substation.

This change in the Proposed Action would likely be prohibitively expensive and out of proportion as a possible mitigation to the impacts being avoided. As an alternative to consolidating all circuits on a single structure of a type not compatible with the Western Interconnection, the Proponents were asked to consider consolidating the existing lines on two structures and locating the Gateway West double-circuit 500-kV structure immediately adjacent to them.

Two transmission alternatives were evaluated to determine the feasibility of consolidating or relocating existing and proposed transmission lines to reduce impact. The alternatives considered are:

- Consolidation Alternative (along a 23.5-mile portion of Alternative 4A) that, at completion, would result in two double-circuit 345-kV lines and one 345-kV single circuit along the alignment of the existing transmission lines (Figure 2.4-4, points A, B, and C).
- Relocation Alternative (along a 28-mile portion of Alternative 4F) that, at completion, would result in two double-circuit 345-kV lines and one 345-kV single circuit (Figure 2.4-4, points A, B, D, E, and C).

The environmental advantages of the Consolidation Alternative would include:

- No increase in number of lines crossing historic trails;
- No increase in number of structures in the vicinity of sensitive visual resources;
- The existing 345-kV line would be rebuilt with dull finish structures, insulators, and conductors; and
- Conformance with management objectives in Kemmerer RMP.

The environmental advantages of the Relocation Alternative would include:

- Removal of three 345-kV crossings of high-quality trails, relocating them to an area of lower sensitivity;
- Reduction in number of structures in the vicinity of sensitive visual resources;
- Avoidance of additional high-quality trail crossings with the Gateway West Project; and
- Conformance with management objectives in Kemmerer RMP.

The main environmental disadvantage for either alternative would be more than doubling the disturbance footprint (due to construction of two new sets of structures and removal of the three old sets of structures that have been in place for 35 to 40 years) in important sage-brush habitat within the Sage Core Area for protection of the greater sage grouse. Also, the Relocation Alternative would not be compliant with the Governor of Wyoming's EO 2011-5, requiring new transmission to be located within a designated corridor.

Because the Consolidation/Relocation Alternatives would involve changes to operating transmission lines, the Proponents were asked to evaluate the electrical, schedule, and reliability advantages or disadvantages (IPC and RMP 2010). In addition to the expense (which would be passed on to all the ratepayers), the Proponents report that:

> *While the rerouting, and rebuilding of Bridger West transmission lines per the BLM proposal is possible, the number of significant transmission outages to address line crossings, line repositions and construction would be prohibitive to Rocky Mountain Power. Additionally, the schedule to perform such a reconstruction is well outside the current Gateway West schedule and would have to be coordinated with planned generation outages at the Jim Bridger Generating Plant.*

Even assuming the cost and schedule issues could be resolved, the more fundamental issue raised by the Proponents is that of reliability. They state:

> *Simultaneous loss of multiple lines or all lines in this corridor (fire, high winds, blizzards, etc.) would result in cascading outages conditions that would impact the entire Western Interconnection. The configurations proposed do not meet the Gateway West project needs and requirements.*

The Gateway South and Gateway Central transmission lines are designed to fully carry the power load if the Gateway West line goes down, to meet system reliability requirements. However, if the Gateway West line was built immediately adjacent to the three Bridger lines, a single event could affect all of these lines. In that event, the Gateway South and Gateway Central lines would be unable to carry the combined Bridger/Gateway West load. The Gateway South/Gateway Central lines are designed to handle the Gateway West load but not the combined Bridger and Gateway West load once the Gateway West line is fully energized.

The Proponents have stated that they cannot support this alternative. System studies have not been conducted on this alternative but it is reasonable to assume that the reliability requirements for common corridor outages would not be met and that Gateway West would not receive a rating for Segment 4 that would meet the fundamental purpose and need of the Project.

These alternatives were eliminated from detailed study because, as of the date it was originally proposed, it:

- Did not meet the Proponent's objectives, as It would not meet the reliability requirements.

Kemmerer Alternative A

The Kemmerer Alternative A was initially considered to avoid a 0.65-mile buffer around sage-grouse leks, a 250-foot buffer around oil and gas wells, and unstable slopes. It would require an entirely Greenfield ROW for about 61.0 miles. This alternative deviates from the Proposed Route approximately 5 miles after crossing the Green River and heads west, along a path located south of the Proposed Route. It crosses the UPRR twice, before turning northwest and briefly rejoining the Proposed Route near an existing transmission line. This alternative then leaves the Proposed Route again, heading west towards Dempsey Ridge, then turning northwest and where it rejoins this route, just west of Rock Creek (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Requires 36.9 miles more Greenfield ROW than the Proposed Route;
- Crosses 3.3 miles more high-quality historic trail buffer than the Proposed Route;
- Crosses 3.3 miles more irrigated farmland than the Proposed Route;
- Crosses 2.6 miles more National Wetland Inventory (NWI) mapped wetlands than the Proposed Route;
- Crosses 13.4 more miles of big game crucial winter habitat than the Proposed Route;
- Crosses 1.9 more miles of sage-grouse core area than the Proposed Route; and
- Approval could be blocked by a conservation easement secured by the NWR south of Cokeville.

Kemmerer Alternative B

In January 2008, the BLM Kemmerer FO proposed a route alternative to the south of the Proposed Route in order to avoid environmental constraints along the existing 345-kV transmission lines. The Kemmerer Alternative B incorporates segments proposed by both the Proponents and the Kemmerer FO. This alternative departs from the feasible alternatives just west of Route 189 and trends west, crossing active trona mines owned by FMC, to the area just west of the Chevron coal mine south of the community of Kemmerer From this point, the Kemmerer Alternative B would proceed to the Wyoming-Utah border south of the Cokeville Meadows NWR through 20.2 miles of Sage Core Area. At the state line, the alternative would turn north (see Appendix O). This area is less disturbed than areas to the north, is within sage-grouse core area, and is big game crucial winter range.

This alternative was eliminated from detailed study because, it:

- Crosses through sage-grouse core areas;
- Crosses through big game crucial winter range; and
- The WGFD expressed concerned that this route alternative would cross high-quality habitat with a new ROW.

Kemmerer Alternative C

The Kemmerer Alternative C was developed early in the routing process. This alternative is located adjacent to the north side of the existing 345-kV corridor (see Appendix O). The alignment of this alternative is within the 2-mile-wide corridor for transmission line siting, established by EO 2011-5 in June 2011 by the Wyoming Governor's office. This alternative is very similar to the Proposed Route, in that it is located on the south side of the existing 345-kV corridor and is also within the designated sage-grouse corridor.

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Encroaches on sage-grouse lek buffers; and

- Offers no advantages over the Proposed Route

Montpelier Alternative

The Montpelier Alternative was initially considered in order to cross fewer miles of irrigated farm land and wetlands compared to the Proposed Route, and to avoid a large ROW with four circuits and three sets of lattice steel structures across the Bear River Valley. This alternative diverges from the Proposed Route near MP 143 and follows an existing single 345-kV line northwest for approximately 9 miles, then proceeds northwest, offset 1,500 feet from the existing 345-kV line, and passes east of the community of Montpelier. About 3 miles north of this community, the alternative route angles west (leaving the existing 345-kV line) and crosses US 30, the Bear River, and the Bear River Valley before proceeding to the west to the uplands where it rejoins the Proposed Route just east of the Caribou-Targhee NF (see Appendix O), the majority of which would be on Greenfield ROW.

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Is 1.5 miles longer than the Proposed Route;
- Crosses two scenic highways;
- Crosses 7.3 more miles of steep slopes than the Proposed Route;
- Requires approximately 10.1 more miles of Greenfield ROW;
- Crosses 8.8 more miles of big game crucial winter range than the Proposed Route; and
- Adds a new transmission crossing of Bear Lake Valley and US 30.

Caribou-Targhee Alternatives

The Caribou-Targhee Alternative was originally the Proposed Route; it was an initial attempt at routing through the Caribou-Targhee NF. The first 3 miles of this alternative follow an existing transmission line, after which it heads north towards the Proposed Route. It generally follows the Proposed Route (but somewhat south of it) until rejoining the Proposed Route west of the Caribou-Targhee NF boundary (see Appendix O).

This alternative was not selected for detailed analysis because the Forest Service staff, who are familiar with existing conditions and responsible for the management of this area, recommended a different route that was more feasible in regard to constructability and environmental impacts. The Proponents therefore shifted their Proposed Route to the route recommended by the Forest Service, and the IDT dropped this (initially Proposed Route) from further study.

This route was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is slightly longer than the Proposed Route;
- Has more angle structures that the Proposed Route; and
- The Forest Service recommended another, more feasible route, in regard to constructability and environmental impacts.

An alignment was also considered that exactly paralleled the existing 345-kV powerline in North Canyon, but offset by 1,500 feet to the north. This alignment was not considered in detail because the Forest staff determined that it unnecessarily impacted a substantial length of North Canyon Creek and the associated Aquatic Influence Zone.

Populus Alternative

The Populus Alternative was initially considered because it would parallel (1,500 feet to the north) an existing 345-kV route through Populus County (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Requires more Greenfield ROW than the Proposed Route;
- Crosses more big game crucial winter range than the Proposed Route;
- Passes within 700 feet of the Downata Hot Springs Resort boundary;
- Traverses one sage-grouse lek and three sage-grouse lek buffers; and
- Results in more environmental effects than the Proposed Route.

2.4.12.6 Segment 5

Deep Creek Alternative A

Deep Creek Alternative A was initially considered as a means of avoiding high-quality forested habitat on BLM-managed lands that are located in the northern portion of the Deep Creek Mountains. This alternative diverges from the Proposed Route at MP 8.3, at which point it heads due west through the Bannock Range, through the Arbon Valley between Pauline and Arbon, and through the Deep Creek Mountains. On the west side of the Deep Creek Mountains, it turns northwest and runs about 3 miles through Rockland Valley, joining Alternative 5D approximately at MP 2, approximately 4 miles northeast of Rockland (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Is 1.3 miles longer than the Proposed Route;
- Crosses 0.4 mile more big game crucial winter range than the Proposed Route;
- Crosses 1.4 miles more VRM Class II than the Proposed Route;
- Crosses 4.6 miles more irrigated agriculture than the Proposed Route;
- Crosses 0.1 mile more wetlands than the Proposed Route; and
- Because topographic constraints do not allow adequate space to accommodate two transmission lines in this area, it would not allow for co-location with Segment 7.

Deep Creek Alternative B

Deep Creek Alternative B was initially considered because it was a more direct route, compared to the Proposed Route. It diverges from the Proposed Route at MP 29.4 and

extends northwest through the Deep Creek Mountains, terminating near MP 6.5 of Alternative 5D (see Appendix O).

While this alignment shortens the length of the line, it would not create an efficient opportunity to co-locate with the Segment 7 route. This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Crosses 1.5 miles of VRM Class II areas than the Proposed Route;
- Crosses 0.2 mile more VRM Class III than the Proposed Route;
- Crosses 0.4 more miles of areas containing steep slopes than the Proposed Route;
- Creates a new route across VRM Class II; and
- Crosses more high-quality forested habitat on BLM-managed lands (located in the northern portion of the Deep Creek Mountains).

Craters of the Moon North and South Alternatives and Alternative Borah Substation Site (12)

A combination of Power County, Bannock County, and Cassia County residents asked why the Proposed Route could not be routed directly north from the Populus Substation in order to avoid Power and Cassia Counties altogether. The Proponents reported that any route to the north would have to effectively go through or around Craters of the Moon National Monument and Preserve. Two alternative routes were identified. Craters of the Moon South Alternative, through the Monument and Preserve, was determined to not be feasible, as it would require Congressional approval, while Craters of the Moon North Alternative went around the Monument and Preserve, but would be at least 50 miles longer than the Proposed Route (see Appendix O). Even if these conditions did not exist, these alternatives do not meet the Proponents' Project Objectives of having two geographically diverse, east-west transmission lines north and south of the Snake River for reliability, one of which would interconnect at the Borah Substation.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Does not meet the Proponents' Project Objectives for reliability;
- Does not meet the Proponents' Project Objective of connecting with the Borah Substation;
- A route through Monument and Preserve would not be feasible as it would require Congressional approval; and
- The alignment around the Monument and Preserve would be 50 miles longer than the Proposed Route, which would substantially increase resource impacts.

2.4.12.7 Segment 7

Deep Creek Alternative

The Deep Creek Alternative was initially considered by the Proponents as a direct westerly route from Populus Substation. This alternative heads west out of the Populus Substation, crossing I-15, traversing the Bannock Range and 2.5 miles of the Caribou-

Targhee NF and the Pleasantview Hills, then passes through the Arbon Valley 2.5 miles south of Arbon, traversing a portion of the Deep Creek Mountains (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Crosses areas designated as BLM VRM Class II and Forest Service Retention;
- Does not parallel any existing transmission lines;
- Crosses 2.4 more miles of steep slope areas than the Proposed Route;
- Crosses 0.3 mile of highly erodible soils, whereas the Proposed Route crosses none;
- Crossed 0.7 mile of areas of slope instability, whereas the Proposed Route crosses none; and
- Has no environmental advantages over the Proposed Route.

Burley Alternative

The Burley Alternative was initially considered to avoid one sage-grouse lek 0.65-mile buffer; however, it crosses closer to the intersection of Hudspeth's Cutoff and the Oregon NHT (also known as "Parting of the Ways") than the Proposed Route. This alternative diverges from the Proposed Route approximately 15 miles west of Rockland, Idaho. It proceeds northwest for 2 miles and then southwest for 1 mile back to the Proposed Route (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Has greater impacts to historic resources compared to the Proposed Route.

Irrigated Cropland Avoidance

The following Segment 7 alternatives were investigated to avoid siting the transmission structures in pivot irrigation areas. Although each achieved this goal to some extent, each had additional disadvantages that appeared substantially greater than avoiding the farmland. After examining these five routes, the Proponents identified the Proposed Route east-west location that avoids most pivots. Cassia County identified an alternative farther south (State Line Route) that avoids all impacts to irrigated agriculture and substantially reduces impact to prime farmland soils. Based on the number of alternatives carried into detailed analysis, the BLM IDT decided not to evaluate the following four alternatives further (see the discussion below for more details regarding the reasons to not to evaluate the following five alternatives).

Oakley Alternative

As discussed above, this alternative was initially considered in order to avoid siting the transmission structures in pivot irrigation areas. This alternative is the southernmost of the irrigation avoidance routes, diverging from the Proposed Route about 5 miles west of Albion. It proceeds southwest along the western foot of the Albion Mountains of the Sawtooth NF, crossing several creeks and washes. After approximately 11 miles, it turns west, passes 2 miles north of Oakley, and continues to the eastern foot of the

Sawtooth NF. At that point, it travels northwest for approximately 11 miles where it rejoins the Proposed Route southeast of Artesian City (see Appendix O).

The only identified advantage of this alternative route over the Proposed Route is that it passes through 4.3 miles less agricultural area than the Proposed Route. This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Is 9.3 miles longer than the Proposed Route;
- Is entirely a Greenfield route (31.9 miles);
- Crosses 4.0 miles more big game crucial winter range than the Proposed Route;
- Crosses four raptor nest 0.5-mile buffers, whereas the Proposed Route impacts none;
- Crosses 3.5 miles more of steep slope areas than the Proposed Route;
- Impacts 4.4 more miles of historic trail buffers than the Proposed Routes;
- Crosses 5.6 miles of VRM Class III, whereas the Proposed Route impacts none; and
- Crosses one sage-grouse lek 0.65-mile buffer, whereas the Proposed Route impacts none.

Artesian City Alternative

As discussed above, this alternative was initially considered in order to avoid siting the transmission structures in pivot irrigation areas. This route diverges from the Proposed Route about 5 miles west of Albion. It travels southwest along the western foot of the Albion Mountains of the Sawtooth NF, crossing several creeks and washes. After approximately 8 miles it turns west, passing 3.5 miles north of Oakley, and continuing to the eastern foot of the Sawtooth NF. At that point it travels northwest for approximately 6 miles where it meets the Proposed Route at mile 109, southeast of Artesian City (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Is 6.2 miles longer than the Proposed Route;
- Is entirely a Greenfield route (28.8 miles);
- Crosses 3.0 miles more big game crucial winter range than the Proposed Route;
- Crosses four raptor nest 0.5-mile buffers, whereas the Proposed Route impacts none;
- Traverses 2.9 miles more of steep slope areas than the Proposed Route; and
- Impacts 3.6 miles more historic trail buffers than the Proposed Route.

Cassia Alternative

As discussed above, this alternative was initially considered in order to avoid siting the transmission structures in pivot irrigation areas. This route diverges from the Proposed Route at the northern edge of the Albion Mountains. It travels generally southwest through Cassia County. It passes 2.5 miles south of Burley and continues to the

Cassia/Twin Falls County line. It proceeds an additional 2 miles, where it joins the Proposed Route southeast of Artesian City, at the north end of the Sawtooth NF (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Crosses one more historic trails compared to the Proposed Route;
- Crosses 4.17 miles more of irrigated farm land than the Proposed Route; and
- Crosses one more major road than the Proposed Route;
- There are 54 more occurrences of residences or structures within 750 feet of the centerline, as compared to 11 for the Proposed Route; and
- There are 116 more occurrences of residences or structures within 1,000 feet of the centerline, as compared to 31 for the Proposed Route.

I-84 South Alternative

As discussed above, this alternative was initially considered to avoid siting the transmission structures in pivot irrigation areas. This alternative was designed to follow the I-84 freeway. It diverges from the Proposed Route where the Proposed Route crosses I-84, east of Delco, and travels west, parallel to I-84 on the south side between I-84 and the Snake River. It crosses north of I-84 at one location to avoid developed portions of the town of Burley, and then returns to the south side. It continues west until approximately 5.0 miles south of Eden. The I-84 South Alternative then proceeds northwest parallel to the south side of I-84, passing north of Twin Falls and south of Jerome and Wendell. It then turns west just northeast of Hagerman and crosses US 30, the Gooding/Twin Falls County line, and the Snake River. It continues west through the remainder of Twin Falls County, enters Elmore County, and then joins the feasible alternative route, Alternative 9B, approximately 5 miles west of the Twin Falls/Elmore County line.

This segment was eliminated based on the extent of urban, agricultural, residential, and commercial development along the I-84 corridor. A variation of the I-84 corridor alternative was given further consideration; it would turn, south of Eldon, and proceed due south to the Cedar Hill Substation (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Crosses 23.44 miles more of irrigated farm land than the Proposed Route;
- Crosses 9.05 miles more land considered prime farm land than the Proposed Route;
- Encroaches upon the City of Heyburn;
- A community advisory committee is working with Idaho Power to create a plan to address the Magic Valley's long-term electric demand. The committee has identified as a priority the need to locate a new 500-kV substation at Cedar Hill that will serve as a hub for 230-kV transmission lines to provide reliable service

throughout the valley. The I-84 route would add 5.4 miles of additional 500-kV transmission line in a rapidly growing area with no increase in reliability;

- There are 64 more occurrences of residences or structures within 300 feet of the centerline, as compared to 5 for the Proposed Route;
- There are 460 more occurrences of residences or structures within 750 feet of the centerline, as compared to 11 for the Proposed Route; and
- There are 853 more occurrences of residences or structures within 1,000 feet of the centerline, as compared to 31 for the Proposed Route.

Malta Bypass Alternatives

Meadow Creek Farms of Malta, Idaho, opposes the alignment of Alternative 7H as it crosses the Malta Valley. The previously proposed Alternative 7H alignment crosses the valley at its widest point, containing approximately 8 miles of agricultural land, some of which contains center-pivot irrigation. In a letter to BLM dated March 3, 2010 (Yates and Yates 2010), two alternative routes were suggested to eliminate the Malta Valley crossing by Alternative 7H. The Malta Bypass Alternative 1 would move the Raft River Valley/Malta Valley crossing to a point approximately 8 miles north of its proposed location. The Malta Bypass Alternative 2 would be a substantial realignment, shifting the eastern end of Alternative 7H approximately 72 miles west of its proposed location and resulting in a route that avoids the Malta Valley completely (see Appendix O). Alternative 7H was later dropped from consideration, making the need for this alternative moot.

Malta Bypass Alternative 1

As discussed above, this alternative was initially considered to avoid the Malta Valley. The Malta Bypass Alternative 1 would cross I-84 at MP 57.6 as it approaches the Raft River Valley from east to west. This alternative would diverge from Alternative 7H at MP 61.0 on the east side of the valley. It would proceed to the northwest, paralleling the interstate for approximately 11.5 miles through the Raft River Valley. It would then turn west for about 4 miles to the west edge of the valley, crossing about 0.8 mile of irrigated agriculture. The route would then turn southwest along the eastern flank of the Cotterell Mountains before rejoining Alternative 7H at MP 77.6 (see Appendix O).

This alternative was eliminated from detailed study prior to dropping Alternative 7H because as of the date it was originally proposed, it:

- Adds 7.7 miles to Alternative 7H, a route that is already more than 9 miles longer than the Proposed Route;
- Crosses 20 ferruginous hawk nest buffers, 11 more than Alternative 7H;
- Crosses 14 miles of the Raft River–Curlew Valley Important Bird Area (IBA), 5 miles more than Alternative 7H. The Idaho Department of Fish and Game is a partner in the IBA program, established to identify, monitor, and conserve key sites for birds in each state or province. In 2006, Curlew Valley and the Raft River-Curlew Valley Ferruginous Hawk IBAs were merged into one IBA;
- The overall benefit to agriculture would be minimal; avoiding only 2.6 miles of irrigated agriculture at the cost of 7.7 miles of additional length; and

- Alternative 7H was later dropped from consideration, making the need for this alternative moot.

Malta Bypass Alternative 2

As discussed above, this alternative was initially considered to avoid the Malta Valley. Malta Bypass Alternative 2 would begin on the Segment 7 Proposed Route at MP 71.9and does not meet the original intent of Alternative 7H, which the Proponents proposed to provide a southern alternative to the Proposed Route that would also be substantially shorter than Alternative 7I. The Malta Bypass Alternative 2 would leave the Proposed Route and proceed south for approximately 21 miles along the east flank of the Cotterell Mountains and then join Alternative 7H. From there, Alternative 7H would continue for approximately 43 miles to the west to Cedar Hill Substation (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Adds 25 miles to Alternative 7H, a route that is already more than 9 miles longer than the Proposed Route;
- Crosses 9 miles of VRM Class II and VRM Class III areas whereas the Proposed Route avoids nearly all sensitive visual classifications;
- Crosses 38 ferruginous hawk nest buffers (34 more than the Proposed Route) and 17 miles of the Raft River-Curlew Valley IBA whereas the Proposed Route would avoid the IBA; and
- Alternative 7H was later dropped from consideration, making the need for this alternative moot.

Foothills Alternative

The Foothills Alternative was initially considered in order to avoid a local hang gliding operation and sage-grouse leks. This alternative deviates from the Proposed Route just southwest of where Alternative 7E diverges, where it heads west for approximately 2 miles, then heads south, generally following the Proposed Route (somewhat west of the Proposed Route), until rejoining the Proposed Route approximately 2 miles east of Antelope Hill (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Impacts irrigated farmland;
- Is in proximity to over a dozen residences;
- Crosses a large dairy; and
- Two other alternatives (7E and 7F) were identified that better avoided these types of impacts.

Pinchpoint and Borah Substation Alternative

The Pinchpoint Alternative was initially considered because Power and Cassia Counties had asked why Segment 7 could not be routed along the existing transmission corridor between Populus and Midpoint Substations. Figure 2.4-5 shows the conceptual path of

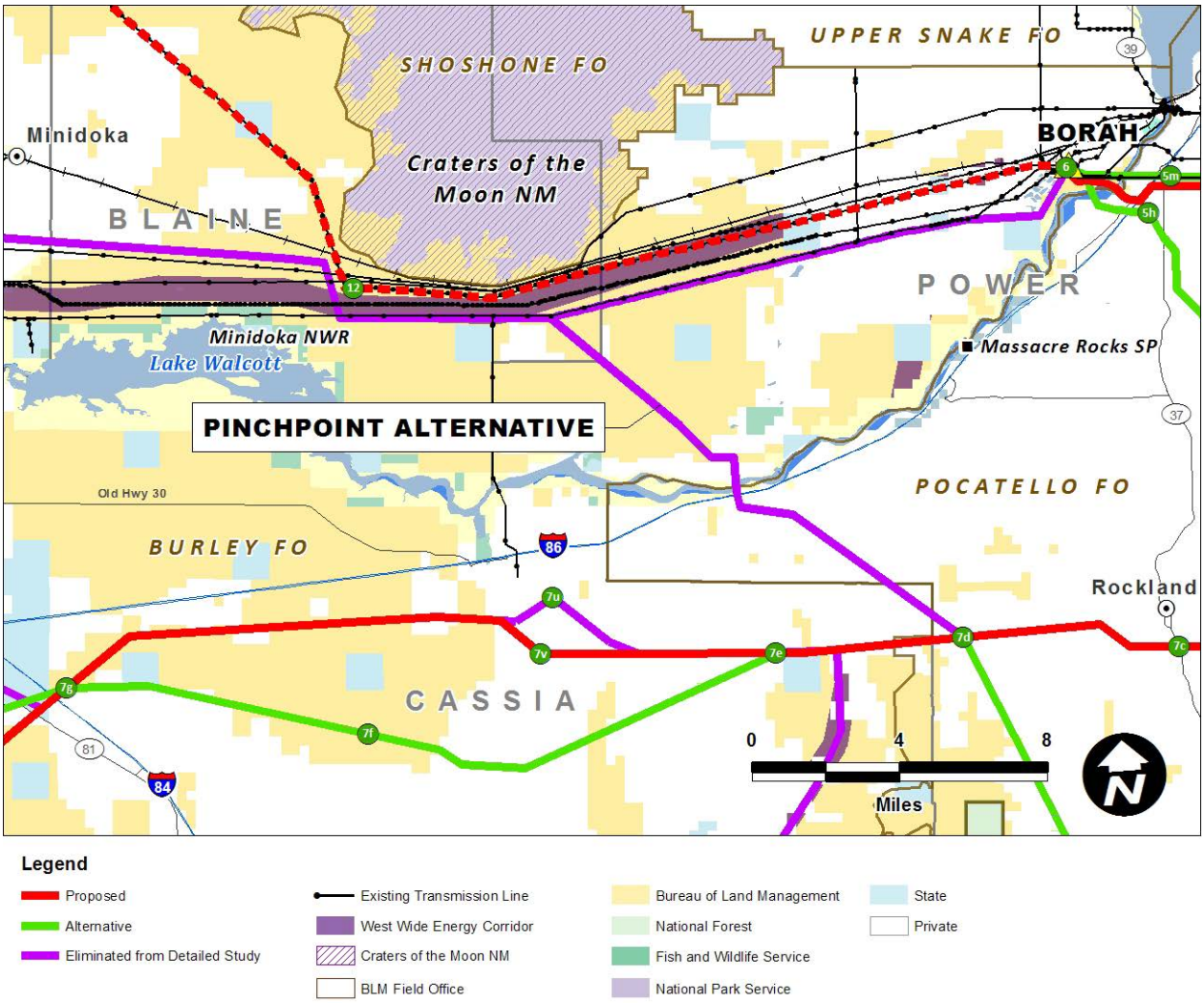


Figure 2.4-5. Pinchpoint Alternative

this alternative. In addition, they wanted to know if the transmission line could connect into a relocated Borah Substation that would allow for more orderly land use development in Power County.

This alternative was eliminated from detailed study because, as of the date it was originally proposed:

- The Proponents report that it would not meet reliability criteria due to a "pinchpoint" from the congestion of existing transmission lines in the area south of Craters of the Moon National Monument and Preserve; and
- An analysis presented by the Proponents in a county-sponsored public meeting reported that relocation of the substation would be prohibitively expensive.

2.4.12.8 Segment 8

The following eight alternatives were considered during the routing process. Each was explored because it followed existing transmission lines, existing corridors, or the WWE corridor, but each presents more environmental impacts than the Proposed Route or

Route Alternative evaluated in detail; therefore, the BLM IDT decided not to carry these routes forward for detailed analysis. In addition, a scoping comment suggested co-location of the Proposed Route with planned realignment and upgrading of Kuna–Mora Road near the northwest portion of where Alternative 8B is adjacent to the SRBOP. Consultation with Ada County confirmed that the highway upgrade was planned for several years later than the in-service date for the Proposed Route.

Summer Lake – Midpoint Alternative

The Summer Lake – Midpoint Alternative was initially considered to parallel the north side of the Summer Lake – Midpoint 500-kV transmission length from where the Project would first encountered this line, all the way east to a termination at the Hemingway Substation (see Appendix O).

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Is parallel to an existing transmission line on the north side for its length; however, the western end of the alternative (in Canyon and Owyhee Counties) would encounter residences and cropland that would make paralleling the existing line infeasible; and
- The concept of paralleling the Project with existing transmission lines was incorporated into the Proposed Route and Alternative 8D, which also avoid residential and agricultural areas that would be impacted by this alternative.

I-84 North Alternative

The intent of this alternative is to follow the I-84 corridor to the extent possible. This route diverges from the feasible alternative at MP 20 and heads northwest, paralleling the south side of I-84 and the north side of the Snake River. It passes just south of Bliss and then turns west, still paralleling I-84 and the river. In Elmore County, this route crosses the Snake River twice and then meets the Proposed Route approximately 4 miles northwest of King Hill (see Appendix O). No attempt was made to follow I-84 from this point because the WWE corridor and existing transmission lines presented better siting options.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Parallels the Snake River in relatively close proximity, and crosses the Snake River twice;
- Is 2.2 miles longer than the Proposed Route;
- Is parallel to existing transmission lines for less of its length than the Proposed Route (24.3 miles less);
- Impacts 7.1 miles more areas within the scenic US 30 buffer; and
- Is in close proximity to developed land uses (agricultural, residential, commercial, recreational) to a much greater extent than the Proposed Route.

I-84 North Variation Alternative

This alternative is a slight variation of the I-84 North Alternative. This option diverges from the Proposed Route northeast of Bliss and travels generally west for 3 miles north of I-84 and the town of Bliss, crosses I-84, and then continues 3 miles west of Bliss, where it joins the I-84 Alternative discussed above (see Appendix O). The environmental advantages and disadvantages of this alternative are the same as those presented for the previously discussed alternative, with the exceptions that it impacts more VRM Class III and less VRM Class II.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Results in more environmental effects than the Proposed Route (as discussed for the I-84 North Alternative).

WWE Corridor Alternative

This alternative was considered in the WWE Corridor PEIS (DOE and BLM 2008); however, changes were made to the WWE corridor during the analysis process, and the final designated WWE corridor is actually located farther to the west than this alternative had anticipated it would be. This alternative diverges from the Proposed Route at the point where Alternative 8A rejoins the Proposed Route. The WWE Corridor Alternative proceeds northwest, parallel to the Proposed Route and an existing transmission line, and follows the WWE corridor. It rejoins the feasible alternatives just east of reference point 8k, on Alternative 8C, at a location a few miles east of Indian Creek Reservoir (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 1.0 mile longer than the Proposed Route;
- Is only within the designated WWE corridor for 0.7 mile, although it would be within or paralleling an alternative WWE corridor for 36.7 miles;
- Parallels an existing transmission line for 0.9 mile less than the Proposed Route;
- Crosses 3.1 miles of VRM Class I, whereas the Proposed Route would cross none; and
- Crosses 0.3 mile more irrigated agriculture than the Proposed Route.

Blair Trail Alternative

The Blair Trail Alternative was initially considered because it parallels the north side of an existing transmission line corridor containing 138-kV, 230-kV, and 500-kV lines. This alternative diverges from the Proposed Route at point 8c just south of Blair Trail Reservoir. It travels just northeast of the previously discussed alternative for approximately 11 miles (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 4.1 miles longer than the Proposed Route;

- Impacts three sage-grouse leks, including both the 0.65-mile and 0.25-mile buffers;
- Crosses 5.1 miles of VRM Class I, whereas the Proposed Route crosses none in this area;
- Crosses 0.9 mile more irrigated agriculture than the Proposed Route;
- Crosses 0.4 mile more steep slopes than the Proposed Route; and
- Impacts 2.4 miles more historic trail buffers than the Proposed Route.

Gooding North Alternative

Residents of Elmore County have commented that the final route should be located farther north and along an existing transmission line from the point where it leaves Midpoint Substation and heads northwest. In response to these comments, the Gooding North Alternative was sited to follow an existing 230-kV transmission line north of the Proposed Route. This 68.5-mile alternative would cross only 10.2 miles of private property. The route would start at Midpoint Substation and proceed to the northwest for approximately 18 miles, before turning to the west-northwest for about 50 miles and rejoining the Proposed Route about 2 miles east of Mountain Home, Idaho (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 1.8 miles more VRM Class I and II land than the Proposed Route;
- Crosses 33.6 miles more elk and mule deer winter range than the Proposed Route;
- Does not follow the WWE corridor;
- Crosses 7.8 miles of pygmy rabbit habitat, whereas the Proposed Route avoids pygmy rabbit habitat;
- Crosses the King Hill Creek ACEC, whereas the Proposed Route avoids it; and
- Crosses 2.4 miles of sage-grouse lek 0.65-mile buffers whereas the Proposed Route avoids sage-grouse buffers.

King Hill Alternative

The King Hill Alternative was routed to reduce impacts to historic trails and sage-grouse leks, the King Hill WSA, the King Hill Creek ACEC, and topography near King Hill and King Hill Creek (steep drainages and wide canyons), as well as an attempt to follow an existing utility corridor where possible. This route diverges from the Proposed Route near MP 30 and extends in a northwest direction, generally paralleling the north side of the Proposed Route. It passes north of Pioneer Reservoir, across the Gooding/Elmore County line, and north of Blair Trail Reservoir. It then continues along the very southern foot of the Mount Bennett Hills, and rejoins the draft WWE corridor alternative (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Parallels an existing transmission line for 20.6 miles less than the Proposed Route; and
- Crosses 6.2 miles more steep slope areas than the Proposed Route.

Bennett Hills Alternatives

The Bennett Hills Alternative was designed to minimize impacts to historic trails. This alternative route diverges from the Proposed Route near MP 30 and extends northwest and then west, extending much farther north than the other alternatives in order to avoid constraints such as the King Hill WSA. The majority of this alternative traverses the Bennett Hills. It then rejoins another alternative where the WWE corridor is designated (see Appendix O).

A variation of the Bennett Hills Alternative was also considered in which the alternative began at Midpoint Substation and extended northwest between Shoshone and Gooding along an existing 230-kV transmission line and joining the alternative in the vicinity of Blair Trail reservoir.

These alternatives were eliminated from detailed study because, as of the date they were originally proposed, they:

- Are 5.0 miles longer than the Proposed Route;
- Cross 0.8 mile more VRM Class I area than the Proposed Route;
- Parallel existing transmission lines for 37.8 miles less than the Proposed Route;
- Are Greenfield routes through the Bennett Hills, presenting construction difficulty due to topography and lack of existing access; and
- Cross 32.4 miles more of steep slope areas than the Proposed Route.

McElroy Butte Alternative

The key issue for this portion of the route was determining the approach to siting a new corridor in an environment of active agricultural use, increasing residential development, and additional planned infrastructure projects. The segments comprising this alternative were an attempt to cross this area with a more direct route.

The first segment of this alternative would require relocating and/or rebuilding a portion of an existing 138-kV transmission line to 230-kV (planned for another project) in addition to the 500-kV Gateway West line on double-circuit 230-/500-kV structures. This route diverges from Alternative 8B approximately 3.5 miles east of Kuna Butte. It would extend southwest for 3 miles, then due west for 3.5 more miles, passing just south of Kuna Butte before crossing Alternative 8B and continuing southwest. Land in this area is a mix of privately owned and SRBOP-managed lands. This alignment would avoid placing a new transmission line through an area annexed by the City of Kuna. The alternative between the first two intersections of the route with Alternative 8B is 1.2 miles shorter than the 4.3-mile equivalent portion of Alternative 8B, but it cuts diagonally across farmlands instead of following the boundary of public and private lands in the hills. The next segment between intersections with Alternative 8B is 0.2 mile shorter

than the 4.7-mile equivalent portion of Alternative 8B but it also would cut diagonally across farmlands instead of following county roads. The southern segment between the final intersection and the substation is 0.8 mile shorter than the 3.3-mile equivalent portion of Alternative 8B but also cuts diagonally across farmlands.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Resulted in diagonal crossings of farms and parcels rather than following public/private boundaries and county roads. This would create greater impacts to agricultural and residential properties compared to the Proposed Route.

2.4.12.9 Segment 9

Magic Valley Alternative

The Magic Valley Alternative was designed to create a more direct route compared to the Proposed Route; however, this alternative passes through more irrigated agricultural land (primarily center pivot irrigation), and is near more rural residential development. This alternative exits the Cedar Hill Substation in a northwesterly direction, generally parallel to and south of the Snake River. It passes through Pleasant Valley, crosses Rock Creek, passes about 3 miles south of Twin Falls, continues through the Melon Valley, and crosses Salmon Falls Creek. From this point it continues northwest through the remainder of Twin Falls County, through northern Owyhee County, and into southern Elmore County, where it meets the Proposed Route where Alternative 9B rejoins the Proposed Route (see Appendix O).

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is within or parallel to the WWE corridor for less than 1 mile, compared to 15.0 miles for the Proposed Route;
- Is mostly on private land and does not parallel existing lines, whereas the Proposed Route follows existing lines and WWE corridor routes for portions of its alignment;
- Passes through 29.3 more miles of irrigated agricultural lands (primarily center pivot irrigation);
- Is in proximity to rural residential development;
- Encroaches upon an airport buffer zone; and
- Impacts 15.8 miles of a designated scenic highway (i.e., Highway 30).

Saylor Creek Alternative

The Saylor Creek Alternative was an initial design for the constriction point between Bruneau Dunes State Park and the Saylor Creek Air Force Range, which was based on a larger required buffer from the Air Force Range. It deviates from the Proposed Route, beginning just east of Browns Gulch and heading due west, then due south, then southwest to avoid conflicts with the Bombing Range.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 1.5 miles longer than the Proposed Route;
- Passes through Bruneau Dunes State Park for 0.3 mile, and would have a greater impact on the view from the park;
- Crosses VRM Class II land, which the Proposed Route would not;
- The Proposed Route was agreed upon through agency consultation as a means to avoid conflicts with the Air Force Range and the State Park, whereas this alternative would not; and
- The final WWE corridor was moved to follow the Proposed Route alignment in this area, by agreement with all adjacent and affected land-managing agencies.

Magic Valley-Saylor Creek Alternative

The Magic Valley-Saylor Creek Alternative was designed to avoid both the Saylor Creek Air Force Range and the Bruneau Dunes State Park, and would be located primarily on BLM-managed lands by extending farther south than the other routes considered. This alternative proceeds due west to a crossing of Salmon Falls Creek and then extends westward for approximately 33 miles through the Bruneau Desert, and crosses the East Fork of the Bruneau River, proceeds about 5 miles through the Inside Desert, crosses Bruneau Canyon/Bruneau River, and proceeds 5 miles through the Blackstone Desert. At this point it turns northwest and travels approximately 25 miles, between Big Hill and Bruneau Canyon/Bruneau River. This alternative then terminates at a location approximately 6 miles west of C.J. Strike Reservoir, where it joins the Proposed Route.

This alternative was eliminated from detailed study because as of the date it was originally proposed, it:

- Crosses 3.6 miles of the Bruneau-Jarbidge Rivers Wilderness Area associated with the Bruneau River in Bruneau Canyon, which would require Congressional approval;
- Crosses 2.0 miles of an ACEC associated with the Bruneau River in Bruneau Canyon. This area is designated as an ACEC because of bighorn sheep and cultural resources in the area;
- Crosses 3.5 miles of VRM Class I on BLM-managed land associated with Bruneau Canyon;
- Is entirely a Greenfield route, resulting in more disturbance;
- Is not within the WWE corridor;
- Crosses 0.6 mile of historic trail buffer;
- Would be within a Military Operating Area for most of its length, which limits; and obstructions to under 100 feet; and
- Crosses more sage-grouse habitat than the Proposed Route (approximately 47 miles compared to approximately 24 miles for the Proposed Route).

Blue Ridge Alternative

The Blue Ridge Alternative was part of the original Proposed Route. It was originally proposed by the Proponents because it was the most direct route between Cedar Hill substation and Hemingway substation; however, it is no longer being considered because it would have passed through the Jarbidge Military Operating Area, an area that prohibits structures greater than 100 feet in height. Instead, the Proposed Action was moved several miles to the north, to the east edge of the Military Operating Area. This new location (i.e., the location of the new Proposed Route) is favored by the military over the Blue Ridge Alternative.

State Route 78 Alternative

The SR-78 Alternative was part of the original Proposed Route near Hemingway Substation. In this location, Segments 8 and 9 converge as the routes approach the substation. Impacts to subdivisions along Segment 8 caused a portion of Segment 8 to be pushed to the south near the western edge of the route. Therefore, the current Proposed Route along Segment 9 has also been moved further south, and the I-78 Alternative was dropped from further evaluation.

Central Birds of Prey Nature Conservation Area (NCA) Alternative

The Proponents identified the Central Birds of Prey NCA Alternative during initial scoping as a means of following existing 138-kV and 500-kV transmission lines on the north side of the Snake River. Most of this alternative's route would parallel an existing 138-kV transmission line in a northwesterly direction, until it meets an existing 500-kV line (approximately 15 miles of the far western portion of this alternative). This alternative would then follow this existing 500-kV line to Hemingway.

This alternative was eliminated from detailed study because, as of the date it was originally proposed:

- Placing the line north of the 500-kV line resulted in impacts to irrigated agricultural land and placing it on the south side of the 500-kV line within the Snake River canyon (in the SRBOP) was deemed infeasible. In addition, it created conflicts with private land uses and subdivisions near Melba

Alternative 9D was developed to deal with conflicts with private land uses and subdivisions that were created by the Central Birds of Prey NCA Alternative. Much of Alternative 9D follows the Central Birds of Prey NCA Alternative, except in three places. In the area south of C.J. Strike Reservoir, the original alternative was moved out of private land. To the northwest of C.J. Strike Reservoir, Alternative 9D was also moved west of the original alternative (onto BLM-managed lands) to avoid private lands. Lastly, instead of extending north up the 138-kV line to the 500-kV line, Alternative 9D turns to the west near Sinker Butte.

2.4.12.10 Segment 10

Minidoka Variation

This alternative was examined during the siting process because it follows the existing transmission line, which runs through the Minidoka National Historic Site. This alternative diverges from the Proposed Route at point 10b of the Proposed Route, northwest of Eden, and generally parallels 1 to 2 miles east of the corresponding

segment of the Proposed Route and just east of the North Side Main Canal. It passes near the Minidoka National Historic Site and rejoins the Proposed Route at point 10a.

This alternative was eliminated from detailed study because, as of the date it was originally proposed, it:

- Is 1.2 miles longer than the Proposed Route;
- Is within the WWE corridor or projected WWE corridor for 6.9 miles less compared to the Proposed Route;
- Crosses 0.5 mile more irrigated agriculture than the Proposed Route; and
- Although the centerline of this alternative does not cross the Minidoka National Historic Site, it would be much closer to the site than the corresponding portion of the Proposed Route.

2.4.13 Use of West-wide Energy Corridor, Designated, and Existing Corridors

During the course of selecting the Proposed Route and Route Alternatives, and identifying constraints and opportunities, the BLM has evaluated the use of existing transmission and designated utility corridors. Table 2.4-3 presents the length and percentage of Proposed Route and Route Alternative segments within the proposed WWE corridor, within the projected WWE corridor (private land segments between WWE corridor segments), adjacent to the WWE corridor, and adjacent to existing transmission corridors.[6]

[6] A route that falls within federal land mapped as WWE corridor is referred to as “within WWE corridor.” A route that does not fall within the WWE corridor but that is located adjacent to the WWE corridor, regardless of land ownership status, is referred to as “parallel to the WWE corridor.”

Table 2.4-3. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors

Segment	Route	Total Segment Length[1/]	Within WWE Corridor (All Ownership Types)[2/]		Within WWE Corridor (Federal Land ONLY)[2/]		Adjacent to WWE Corridor (All Ownership Types)[2/]		Within or Adjacent to Existing Transmission Corridor (Existing Transmission Lines ONLY)		Within Existing Transmission Corridor (Includes WWE Corridor and Existing Transmission Lines)	
			Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total
1W(a)	Preferred/Proposed - Total Length	73.8	40.3	54.6	17.0	23.0	26.4	35.8	61.0	82.7	68.0	92.1
	Preferred/Proposed - Comparison portion for Alternative 1W(a)-B	16.5	7.2	43.6	–	–	6.7	40.6	14.5	87.9	15.2	92.1
	Alternative 1W(a)-B	20.9	–	–	–	–	0.5	2.4	8.3	39.7	8.6	41.1
1W(c)	Preferred/Proposed - Total Length	73.6	60.1	81.7	21.1	28.7	12.7	17.3	71.6	97.3	72.3	98.2
2	Preferred/Proposed - Total Length	91.9	28.8	31.3	12.8	13.9	10.5	11.4	43.2	47.0	46.8	50.9
	Preferred/Proposed - Comparison portion for Alternative 2A	16.8	1.1	6.5	0.9	5.4	0.7	4.2	2.1	12.5	2.2	13.1
	Alternative 2A	16.0	11.4	71.3	3.8	23.8	0.8	5.0	16.0	100.0	16.0	100.0
	Preferred/Proposed - Comparison portion for Alternative 2B	12.5	–	–	–	–	–	–	0.4	3.2	0.4	3.2
	Alternative 2B	12.2	5.7	46.7	1.5	12.3	1.0	8.2	9.1	74.6	9.1	74.6
3	Preferred/Proposed - Total Length	45.9	16.1	35.1	7.0	15.3	3.7	8.1	40.1	87.4	41.6	90.6
	Segment 3A Preferred/Proposed - Total Length	5.1	0.7	13.7	0.7	13.7	0.3	5.9	1.0	19.6	1.0	19.6
4	Preferred/Proposed - Total Length	197.6	26.0	13.2	11.9	6.0	10.6	5.4	150.1	76.0	150.4	76.1
	Preferred/Proposed - Comparison portion for Alternatives 4B, C, D, E, F	85.2	–	–	–	–	–	–	77.5	91.0	77.5	91.0
	Alternative 4B	100.2	–	–	–	–	–	–	35.6	35.5	35.6	35.5
	Alternative 4C	101.6	–	–	–	–	–	–	35.6	35.0	35.6	35.0
	Alternative 4D	100.8	–	–	–	–	–	–	35.6	35.3	35.6	35.3
	Alternative 4E	102.2	–	–	–	–	–	–	35.6	34.8	35.6	34.8
	Alternative 4F	87.5	–	–	–	–	–	–	54.1	61.8	54.1	61.8
	Proposed - Comparison portion for Alternative 4G	2.4	–	–	–	–	–	–	–	–	–	–
	Alternative 4G	2.6	–	–	–	–	–	–	–	–	–	–
5	Preferred - Total Length	73.3	–	–	–	–	–	–	16.5	22.5	16.5	22.5
	Proposed - Total Length	55.7	–	–	–	–	–	–	17.1	30.7	17.1	30.7
	Proposed - Comparison portion for Alternatives 5A, B	22.3	–	–	–	–	–	–	0.5	2.2	0.5	2.2
	Alternative 5A	29.7	–	–	–	–	–	–	–	–	–	–
	Alternative 5B	40.4	–	–	–	–	–	–	–	–	–	–
	Proposed - Comparison portion for Alternative 5C	32.9	–	–	–	–	–	–	0.5	1.5	0.5	1.5

Table 2.4-3. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Route	Total Segment Length[1/]	Within WWE Corridor (All Ownership Types) [2/]		Within WWE Corridor (Federal Land ONLY) [2/]		Adjacent to WWE Corridor (All Ownership Types) [2/]		Within or Adjacent to Existing Transmission Corridor (Existing Transmission Lines ONLY)		Within Existing Transmission Corridor (Includes WWE Corridor and Existing Transmission Lines)	
			Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total
5 (cont.)	Alternative 5C	26.0	–	–	–	–	–	–	26.0	100.0	26.0	100.0
	Proposed - Comparison portion for Alternative 5D	19.2	–	–	–	–	–	–	5.8	30.2	5.8	30.2
	Alternative 5D	17.0	–	–	–	–	–	–	1.3	7.6	1.3	7.6
	Proposed - Comparison portion for Alternative 5E	5.8	–	–	–	–	–	–	5.4	93.1	5.4	93.1
	Alternative 5E	5.3	–	–	–	–	–	–	5.3	100.0	5.3	100.0
6	Preferred/Proposed - Analysis Length[3/]	0.5	–	–	–	–	–	–	0.5	100.0	0.5	100.0
7	Preferred - Total Length	130.2	1.4	1.1	0.5	0.4	1.0	0.8	12.2	9.4	13.8	10.6
	Proposed - Total Length	118.2	1.4	1.2	0.5	0.4	1.1	0.9	12.2	10.3	13.8	11.7
	Proposed - Comparison portion for Alternatives 7A, B	35.1	–	–	–	–	–	–		–	–	–
	Alternative 7A	37.7	–	–	–	–	–	–		–	–	–
	Alternative 7B	46.2	–	–	–	–	–	–		–	–	–
	Proposed - Comparison portion for Alternative 7C	20.1	–	–	–	–	–	–		–	–	–
	Alternative 7C	20.3	–	–	–	–	–	–		–	–	–
	Proposed - Comparison portion for Alternative 7D	6.2	–	–	–	–	–	–		–	–	–
	Alternative 7D	6.8	–	–	–	–	–	–		–	–	–
	Proposed - Comparison portion for Alternative 7E	3.8	–	–	–	–	–	–		–	–	–
	Alternative 7E	4.5	–	–	–	–	–	–		–	–	–
	Proposed - Comparison portion for Alternative 7F	10.5								–	–	–
	Alternative 7F	10.8	–	–	–	–	–	–	–	–	–	–
	Proposed - Comparison portion for Alternative 7G	3.3	0.2	6.1	0.2	6.1	0.4	12.1	0.3	9.1	0.5	15.2
	Alternative 7G	3.4	0.2	5.9	0.2	5.9	0.3	8.8	0.3	8.8	0.5	14.7
	Proposed - Comparison portion for Alternative 7K	118.2	1.4	1.2	0.5	0.4	1.1	0.9	12.2	10.3	13.8	11.7
	Alternative 7K	148.1	1.6	1.1	0.5	0.3	1.4	0.9	12.3	8.3	14.4	9.7

Table 2.4-3. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Route	Total Segment Length[1/]	Within WWE Corridor (All Ownership Types) [2/]		Within WWE Corridor (Federal Land ONLY) [2/]		Adjacent to WWE Corridor (All Ownership Types) [2/]		Within or Adjacent to Existing Transmission Corridor (Existing Transmission Lines ONLY)		Within Existing Transmission Corridor (Includes WWE Corridor and Existing Transmission Lines)	
			Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total
8	Preferred - Total Length	132.0	33.2	25.2	14.5	11.0	3.4	2.6	95.2	72.1	100.7	76.3
	Proposed - Total Length	131.5	38.1	29.0	18.8	14.3	4.7	3.6	110.1	83.7	116.9	88.9
	Proposed - Comparison portion for Alternative 8A	51.9	0.0	0.0	0.0	0.0	0.6	1.2	46.7	90.0	47.1	90.8
	Alternative 8A	53.6	29.5	55.0	18.9	35.3	9.3	17.4	38.3	71.5	49.1	91.6
	Proposed - Comparison portion for Alternative 8B	45.3	6.5	14.3	5.3	11.7	2.4	5.3	32.0	70.6	35.5	78.4
	Alternative 8B	45.8	1.6	3.5	1.0	2.2	1.1	2.4	17.1	37.3	19.3	42.1
	Alternative 8B - Comparison portion for Alternative 8C	6.5	0.8	12.3	0.8	12.3	0.5	7.7	2.1	32.3	3.0	46.2
	Alternative 8C	6.4	4.3	67.2	1.9	29.7	0.5	7.8	5.5	85.9	6.4	100.0
	Segment 8 Proposed - Comparison portion for Alternative 8D	6.9	–	–	–	–	–	–	6.9	100.0	6.9	100.0
	Alternative 8D	8.1	–	–	–	–	–	–	6.9	85.2	6.9	85.2
	Segment 8 Proposed - Comparison portion for Alternative 8E	7.0	–	–	–	–	–	–	3.4	48.6	3.4	48.6
	Alternative 8E	18.3	–	–	–	–	–	–	11.1	60.7	11.1	60.7
9	Preferred - Total Length	171.4	34.0	19.8	27.9	16.3	6.0	3.5	17.6	10.3	48.5	28.3
	Proposed - Total Length	162.2	67.8	41.8	53.9	33.2	10.6	6.5	17.6	10.9	86.9	53.6
	Proposed - Comparison portion for Alternative 9A	7.8	0.0	0.0	0.0	0.0	0.4	5.1	0.4	5.1	0.4	5.1
	Alternative 9A	7.7	0.0	0.0	0.0	0.0	2.2	28.6	2.2	28.6	2.3	29.9
	Proposed - Comparison portion for Alternative 9B	49.1	3.8	7.7	3.8	7.7	1.5	3.1	0.8	1.6	6.1	12.4
	Alternative 9B	52.3	43.9	83.9	28.2	53.9	2.8	5.4	22.4	42.8	52.3	100.0
	Proposed - Comparison portion for Alternative 9C	14.4	–	–	–	–	–	–	0.8	5.6	0.8	5.6
	Alternative 9C	14.4	–	–	–	–	3.1	21.5	9.5	66.0	9.5	66.0
	Proposed - Comparison portion for Alternatives 9D, F, G, H	57.2	41.2	72.0	32.8	57.3	7.3	12.8	–	–	48.5	84.8
	Alternative 9D	60.1	0.4	0.7	0.4	0.7	1.1	1.8	31.3	52.1	32.8	54.6
	Alternative 9F	63.3	11.4	18.0	8.4	13.3	3.6	5.7	29.0	45.8	44.0	69.5

Table 2.4-3. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Route	Total Segment Length[1/]	Within WWE Corridor (All Ownership Types) [2/]		Within WWE Corridor (Federal Land ONLY) [2/]		Adjacent to WWE Corridor (All Ownership Types) [2/]		Within or Adjacent to Existing Transmission Corridor (Existing Transmission Lines ONLY)		Within Existing Transmission Corridor (Includes WWE Corridor and Existing Transmission Lines)	
			Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total	Miles	% Total
9 (cont.)	Alternative 9G	57.8	0.4	0.7	0.4	0.7	1.0	1.7	25.9	44.8	27.3	47.2
	Alternative 9H	61.0	11.4	18.7	8.4	13.8	3.5	5.7	23.6	38.7	38.6	63.3
	Proposed - Comparison portion for Alternative 9E (revised)	61.4	41.2	67.1	32.8	53.4	7.3	11.9	–	–	48.5	79.0
	Alternative 9E (revised)	70.6	7.4	10.5	6.8	9.6	2.7	3.8	–	–	10.1	14.3
10	Preferred/Proposed - Total Length	34.4	27.2	79.1	9.9	28.8	1.9	5.5	29.4	85.5	32.2	93.6

1/ Mileages are rounded to tenths of a mile throughout table; therefore, rows/columns may not sum exactly.

2/ The WWE Corridor PEIS (DOE and BLM 2008) established energy corridors on federally managed land only. Federally managed lands are often not continuous with intervening privately owned land or lands managed by other public entities. Where the WWE corridor predominates because of great extent of federally managed lands, remaining gaps would be logical projectors of where an energy corridor would be projected to occur.

3/ Line to be energized from 345 kV to 500 kV. New construction only at substation approaches.

T-line = transmission line

2.5 SUBSTATION ALTERNATIVES

The Project includes three proposed substations and expansions or modifications at nine existing substations. Alternative sites were evaluated for the three proposed substations. Alternative sites were not considered at sites where substations exist already. None of the substation alternatives were studied in detail in the EIS for the reasons presented in Section 2.5.1.

2.5.1 Proposed Substations

2.5.1.1 Aeolus Substation

The Aeolus Substation site is located in Carbon County approximately 10 miles west of Medicine Bow, Wyoming, on private land as shown in Appendix A, Figure A-3. The substation is the southern terminus of Segment 1W. The Aeolus Substation is proposed to electrically terminate the new 230-kV line 1W(a), the reconstructed portion of the Dave Johnston – Rock Springs 230-kV line 1W(c) looped in and out of the Aeolus Substation, and the new 500-kV transmission lines that will extend west to the Anticline Substation (Segments 2 and 3).

Equipment installed will include 500-kV and 230-kV circuit breakers, high-voltage switches, bus supports, transmission line termination structures, and other equipment for each transmission line. The 500-kV transmission line termination structures are approximately 125 to 135 feet tall. Additional equipment including 500/230-kV transformers, 500-kV capacitors, and 500-kV shunt reactors (which resemble a transformer in appearance) will be installed. In addition, a Static Var Compensator will be installed for system reliability. This equipment will occupy about 10 to 15 acres within the overall substation fenced area. A new control house will be added to accommodate the necessary system communications and control equipment. Site development will disturb approximately 120 acres and 100 acres will be required for operations (Appendix A, Figure A-13).

The Aeolus Substation 500-kV transformers weigh approximately 600,000 pounds during shipment. They will be transported to the Project vicinity, offloaded to a heavy haul transporter, and then transported over the highway to the Aeolus site. The heavy haul transporter is approximately 190 feet long, has 35 axles, and weighs 300,000 to 325,000 pounds. Due to the size of the vehicle, a route with minimal grade and large turning radii is necessary. County Road 121 will be upgraded to provide the required access (see below).

The Aeolus Substation will require development of a distribution line to provide electrical power during construction and operations. The 11-mile distribution line will be located within or adjacent to the County Road 121 ROW between US 30 and the site. Figure 2.5-1 shows the location of County Road 121 and access routes to the Aeolus site.

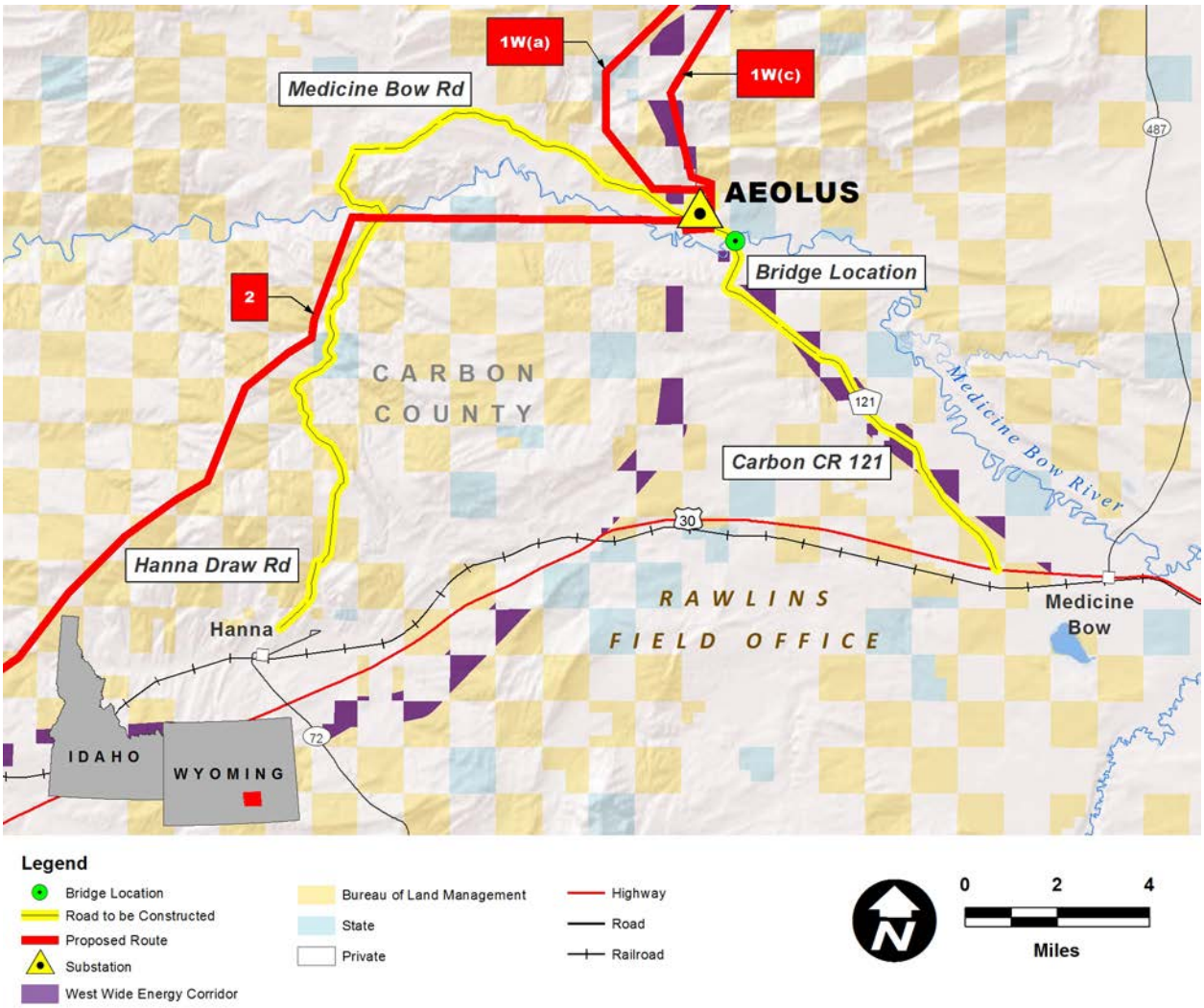


Figure 2.5-1. County Road 121 Access to Aeolus Substation

<u>County Road 121 Improvements</u>

Existing Conditions: County Road 121 is currently a single-lane road, about 20 feet wide and about 11 miles long, from US 30 to the Aeolus Substation. It is in poor condition with a thin layer of gravel over a clay base and without turnouts. It includes a single-lane bridge over the Medicine Bow River built in 1914 and refurbished with a metal deck around 1972 (see Figure 2.5-2). The bridge was recently inspected by the Wyoming Department of Transportation and found to be in poor structural condition. Its current weight limitations include a 10-ton weight limit for single axle trucks and 13-ton limit for multiple axle trucks, which will not accommodate the heavy haul transporters.

Figure 2.5-2. Looking Westerly Toward the Existing County Road 121 Bridge

Needed Improvements: County Road 121 will be reconstructed from US 30 to the immediate vicinity of the Aeolus Substation. Reconstruction will result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway. Reconstruction includes the following:

- Realignment of the roadway to improve negotiability, visibility, and safety;
- Addition of turnouts, expanding the roadway to 30 feet wide for up to 100 feet along the roadway every mile or where existing terrain and alignment will not accommodate the heavy haul transporter or sight distances are inadequate;
- Improved roadway, likely to include subgrade improvement and application of a geotextile fabric covered by 6 to 8 inches of compacted aggregate base;
- Inspection of all culverts for adequacy and replacement of up to 16;
- Inspection of all cattle guards for adequacy and replacement of up to 6;
- Replacement of the bridge with one that meets Wyoming Department of Transportation standards for HS-20 loading.[7] Based on preliminary engineering, the new bridge requires an approximate span of 125 to 150 feet and a 24-foot travelway width. The new bridge will be installed just downstream (south) of the existing bridge; and
- After the new bridge is completed, removal of the old bridge and its approaches.

Prior to conducting any work, the existing bridge will be evaluated for eligibility for listing on the NRHP and any required mitigation, including photographic recordation, will be completed if it is determined eligible.

[7] Loading is either H-20 or HS-20 based on an axle load of 32 kilo-pounds. This load is divided by the number of tires on each axle.

2.5.1.2 Anticline Substation

The proposed Anticline Substation is located about 2.5 miles southeast of the Jim Bridger Power Plant, along the east side of Deadman Draw, approximately 30 miles east of Rock Springs, Wyoming, as shown on Appendix A, Figure A-4. The proposed substation will consist of a new 500/345-kV yard constructed southeast of the power plant occupying a fenced area of about 140 acres on private land (Appendix A, Figure A-14). Equipment to be installed within the fenced area includes 500/345-kV circuit breaker bays and associated equipment, bus supports, high-voltage switches, transmission line termination structures, 500/345-kV transformers, 345-kV phase shifting transformer, 500-kV reactors, 500-kV capacitors, and a new control building to house communications and control equipment. Access to the new 500-kV yard requires improving about 0.5-mile of existing dirt road to a 20- to 24-foot all-weather surface road between the existing Jim Bridger Power Plant access road and proposed Anticline Substation fenceline, improved highway access approaches, and a UPRR crossing. Within the substation site, approximately 0.4 mile of intermittent stream channel will be realigned to provide site drainage. Site development will disturb approximately 135 acres and 125 acres would be required for operations.

The new 500-kV line from the interconnection with Segment 2 (part of Segment 3), the new 500-kV line going to Populus Substation (Segment 4), and the new 345-kV line going to the Jim Bridger 345-kV Substation (Segment 3A) will connect into the Anticline Substation yard.

2.5.1.3 Cedar Hill Substation

The proposed Cedar Hill Substation will be located on private land approximately 20 miles southeast of Twin Falls, Idaho, as shown on Appendix A, Figure A-15 as the western terminus of Segment 7. The Cedar Hill Substation is the interconnection point for three new Gateway West 500-kV transmission lines. The three lines include the 500-kV line from the Populus Substation (Segment 7), the 500-kV line from the Hemingway Substation (Segment 9), and the 500-kV line from the Midpoint Substation (Segment 10).

Each of the transmission line bays contain high-voltage circuit breakers and switches, bus supports, and control equipment. New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to terminate the 500-kV conductors. A new control building will be constructed to house the 500-kV communications and control equipment for the proposed Gateway West 500-kV transmission lines. Approximately 1,000 feet of new access road will be required between the existing county line road and the substation.

Site development will disturb approximately 65 acres and 55 acres will be required for operations.

2.5.2 Existing Substations

The substations described in this section are already operational. Alternative locations for these substations were not considered. The following describes their locations and the modifications proposed as part of Gateway West.

2.5.2.1 Windstar Substation

The Windstar Substation is located on private lands approximately 3.5 miles east of Glenrock, Wyoming, and approximately 1 mile north of the Dave Johnston Power Plant (Appendix A, Figure A-16).

For the Gateway West Project, one new 230-kV line bay, including 230-kV circuit breakers and associated equipment, bus supports, high-voltage switches, transmission line termination structures, and 230-kV capacitors, will be added to the Windstar Substation to electrically terminate the new transmission line from the Aeolus Substation (Segment 1W[a]). Site development will disturb approximately 5 acres.

A new control house will be added or the existing control house will be expanded and/or added to accommodate the necessary system communications and control equipment. The existing access road will be used to reach the site.

2.5.2.2 Dave Johnston Substation

The existing Dave Johnston Substation 230-kV yard (Segment 1W[c]) will be modified to match the proposed capacity of the transmission configuration, Replacement of existing 230-kV circuit breakers, high-voltage switches, tubular and wire bus, bus supports, and transmission line termination structures is required. No expansion of Dave Johnston Substation is proposed and all construction will take place within the existing substation fence (Appendix A, Figure A-17).

2.5.2.3 Heward Substation

The Heward Substation will be developed immediately adjacent to the existing Difficulty Substation, which is located about 45 miles from Bessemer Bend and approximately 34 miles north of Medicine Bow, Wyoming, as shown on Appendix A, Figure A-18. Although operationally independent of the Difficulty Substation, it is in effect an expansion of an existing use. Heward comprises a new 230-kV yard to the west of and immediately adjacent to the existing substation fenced area. The Heward 230-kV yard will be required because the existing 230-kV bus and other equipment within the Difficulty Substation is under-rated for accommodating the additional electrical capacity that will be added by rebuilding and reconductoring a portion of the existing Dave Johnston – Rock Springs 230-kV line between the Dave Johnston Power Plant and the planned Aeolus Substation (Proposed Route 1W[c]). Adding the new 230-kV yard will increase the flow through capacity of the Difficulty 230-kV bus and also facilitate maintaining power to Difficulty Substation customers during construction.

Site development will disturb approximately 7 acres and 5 acres will be required for operations.

The new 230-kV yard includes 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures. The 230-kV transmission line termination structures will be approximately 70 feet tall. A new control house will be constructed within the fenced area to accommodate the necessary system communications and control equipment in the new 230-kV yard. The 230-kV bus will be extended to interconnect to the existing Difficulty Substation 230-kV bus. The existing Difficulty Substation access road will be utilized on the current alignment and state

highway entrance. Approximately 500 feet of additional roadway will be developed adjacent to the northern substation fence line to provide alternative equipment access to the Difficulty Substation. The rebuilt Dave Johnston – Heward and Heward – Aeolus 230-kV lines will enter and exit the new substation yard from the north and south as shown in Appendix A, Figure A-18.

2.5.2.4 Shirley Basin Substation

The existing 230-kV Shirley Basin Substation will require replacement of existing 230-kV circuit breakers, high-voltage switches, tubular and wire bus, bus supports, and transmission line termination structures. No expansion of Shirley Basin Substation is proposed and all construction will take place within the existing substation fence (Appendix A, Figure A-19).

2.5.2.5 Jim Bridger 345-kV Substation

The existing Jim Bridger Power Plant has a separate 345-kV substation yard located east of the plant (Appendix A, Figure A-20). A 5.5-mile interconnecting 345-kV transmission line between the new Anticline Substation 500-kV yard and the existing Jim Bridger Substation 345-kV yard (Segment 3A) will be required to electrically connect the two substations. The Jim Bridger 345-kV yard will be expanded by about 10 acres to accommodate the line termination position.

Equipment to be installed within the fenced area includes 345-kV circuit breaker bays and associated equipment, bus supports, high-voltage switches, transmission line termination structures and relocated 345-kV capacitors.

2.5.2.6 Populus Substation

The existing Populus Substation (Figure A-21), located near the town of Downey, Idaho, will be expanded to accommodate the addition of the Gateway West 500-kV transmission lines (Appendix A, Figure A-1). A new 500-kV yard will be constructed in the expansion area north of the existing 345-kV substation yard and interconnected to the existing 345-kV station equipment through a new 500/345-kV transformer bank. Site development will disturb approximately 90 acres and 80 acres will be required for expansion of the existing fence line for operations (Appendix A, Figure A-21). New 500–kV transmission line bays will be installed for connection to the transformer bank and the termination of the three 500-kV line positions for lines to Anticline Substation (Segment 4), Borah Substation (Segment 5), and Cedar Hill Substation (Segment 7).

Each of the transformer and line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. A new 500/345-kV transformer bank, 500-kV reactors, and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. A new control building will be constructed to house the 500-kV communications and control equipment. The existing access road will be used to reach the site.

2.5.2.7 Borah Substation

The existing Borah Substation is located near American Falls, Idaho (Appendix A, Figure A-8). Expansion of the existing substation requires expansion of the fenced area

on private land to accommodate the new 500-kV facilities. Site development will disturb approximately 40 acres, and 35 acres will be required for expansion of the existing fence line for operations. The existing Midpoint – Kinport 345-kV line, which currently bypasses the Borah Substation, will be reconnected into an existing 345-kV line bay at this substation and the remaining line segment to Midpoint Substation (Segment 6 – upgrade to 500 kV) and the 500-kV line from Populus Substation (Segment 5) will terminate in the new expansion area. The new 500-kV facilities will be connected to the existing station by the addition of a 500/345-kV transformer bank (Appendix A, Figure A-22).

Each of the transformer and line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. The new 500/345-kV transformer bank, 500-kV reactors, and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. The existing control building will be enlarged and/or a new control building will be added to house the new 500-kV communications and control equipment. The existing access road will be used to reach the site.

2.5.2.8 Midpoint Substation

The existing Midpoint Substation is approximately 9 miles south of Shoshone, Idaho, on Highway 93 (Appendix A, Figure A-10). The Midpoint Substation will be expanded by 40 acres on private land to accommodate the new Gateway West 500-kV lines. The three 500-kV transmission lines from Hemingway Substation (Segment 8), Cedar Hill Substation (Segment 10), and Borah Substation (Segment 6) will terminate in the expansion area (Appendix A, Figure A-23).

Each of the transmission line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment. New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be installed to physically terminate the 500-kV conductors. The existing control building will be enlarged and/or a new control building will be added to house the 500-kV communications and control equipment for the new Gateway West 500-kV transmission lines. The existing access road will be used to reach the site.

2.5.2.9 Hemingway Substation

The existing Hemingway Substation is located approximately 30 miles southwest of Boise, Idaho, just off of Highway 78 near Wilson Creek Cemetery, shown on Appendix A, Figure A-10 as the western terminus of Segment 8 and Segment 9.

The Hemingway Substation has sufficient space planned within the existing fenced area to accommodate the two new 500-kV transmission line bays for Gateway West (Appendix A, Figure A-24). One bay will be for the 500-kV line from the Midpoint Substation (Segment 8) and one for the 500-kV line from the Cedar Hill Substation (Segment 9). Each of the transmission line bays contains high-voltage circuit breakers and switches, bus supports, and control equipment.

New 500-kV reactors and 500-kV capacitors will be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, will be

installed to physically terminate the 500-kV conductors. The communications and control equipment for the Gateway 500-kV transmission lines will be housed within the existing control building. The existing access road will be used to reach the site.

2.6 DESIGN ALTERNATIVES

The Proponents considered a range of alternative overhead structure designs, structure finish and surface treatment materials and finishes, and underground technologies prior to selecting the proposed design.

2.6.1 Proposed Structure Design

During the initial study phase of the Project, the Proponents considered a number of different steel structure types for the Project. The structure types to be considered for the Project were selected based on the Proponents' experience with their existing 230-kV, 345-kV, and 500-kV transmission systems; industry experience; and the Proponents' current design standards for 500-kV systems.

The Proposed Action for each of the segments, as summarized in Section 2.1, includes a brief description of the proposed structures to be used. Appendix B provides further details of each structure type. The Proponents propose H-frame steel structures for the 230-kV and 345-kV segments of the Project (Appendix B, Figures B-1 and B-2, respectively) and single-circuit steel lattice structures for the 500-kV segments (Appendix B, Figure B-3). The Proponents report that the steel lattice configuration is the least cost option for the 500-kV segments. The Proponents propose to reenergize the existing 345-kV line in Segment 6 to 500 kV. Approximately five structures approaching each substation would be replaced with single-circuit 500-kV lattice towers; no other tower replacement would be required for Segment 6. Table 2.6-1 summarizes the transmission structure types proposed by the Proponents by segment. Details for each of these structure types, including descriptions, illustrations, and comparative tables, can be found in Appendix B.

Table 2.6-1. Proposed Transmission Structures by Segment

Segment	Circuits and Voltage	Proposed Structure Type
1W(a)	New Single-Circuit 230-kV	Steel H-frame
1W(c)	Reconstructed Existing Single-Circuit 230-kV	Replace existing wooden H-frame with steel H-frame
2	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
3	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
3A	New Single-Circuit 345-kV	Single-circuit 345-kV steel H-frame
4	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
5	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
6	Re-Energize existing 345-kV line to 500-kV	Approximately five structures approaching each substation to be replaced with single-circuit 500-kV lattice towers; no tower replacement elsewhere
7	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
8	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
9	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower
10	New Single-Circuit 500-kV	Single-circuit 500-kV steel lattice tower

2.6.1.1 Single-Circuit 230-kV Structures

Lattice

The Proponents considered steel lattice towers where 230-kV line configurations are needed. Unlike the 500-kV configuration, lattice towers do not offer the same advantages over the H-frame configuration at the 230-kV voltage level. Smaller towers can be used at 230 kV than at 500 kV due to the reduced conductor to tower and conductor to ground spacing requirements. Because of the smaller size of the structures, it is feasible to design and construct H-frame structures at a lower cost than for lattice towers. Furthermore, the H-frame structures provide advantages in controlling perching opportunities for raptors, crows, and ravens and were therefore proposed by the Proponents. Because there is no economic or environmental advantage to using lattice towers, only the dull galvanized and self-weathering steel H-frame structures have been carried forward for detailed analysis.

2.6.1.2 Single-Circuit 500-kV Structures

Table 2.6-2 provides a description and comparison of the proposed single-circuit lattice and H-frame structures carried forward for detailed analysis.

Table 2.6-2. Summary and Comparison of Single-Circuit 500-kV Lattice Tower vs. Tubular Steel H-frame Tower

Topic	Single-Circuit 500-kV Lattice Steel Tower (LST)	Single-Circuit 500-kV Tubular Steel Pole (TSP) H-Frame	Comments
Tangent Tower Type	S5A (delta configuration)	H-frame (horizontal configuration)	Delta is the Proponents' preferred electrical configuration.
Tower Finish	Dull Galvanized	Dull Galvanized	
Typical Tower Height	156 feet	133 feet	S5A tower is on average 23 feet taller than an H-frame structure.
Typical Tangent Tower Weight	45,660 pounds	56,500 pounds	
ROW Width	250 feet		
Average Span	Approximately 1,200 – 1,300 feet	Approximately 1,200 – 1,300 feet	
Maximum Span within ROW	2,800 feet	2,400 feet	For the same ROW width, the max span is less for an H-frame structure due to the larger spacing between outside phases.
Short-term Ground Disturbance	All short-term ground disturbances associated with construction would be approximately equal for LST and TSP H-frame construction.		
Long-term Ground Disturbance	Long-term disturbance = 50 feet x 50 feet = 2,500 square feet (0.06 acre) A construction pad with level terrain is necessary at each tower location so that live-line maintenance can be performed on the structures. This is the case for both LST and TSP H-frame construction.		
Actual Footprint	46 feet x 41 feet per tower (1,886 square feet = 0.043 acre)	10 feet x 45 feet per tower (450 square feet = 0.010 acre)	

Table 2.6-2. Summary and Comparison of Single-Circuit 500-kV Lattice Tower vs. Tubular Steel H-frame Tower (continued)

Topic	Single-Circuit 500-kV Lattice Steel Tower (LST)	Single-Circuit 500-kV Tubular Steel Pole (TSP) H-Frame	Comments
Foundation Sizes	Four 4-foot x 22-foot drilled pier foundations	Two 7-foot x 25-foot drilled pier foundations	
Foundation Volume	41.0 cubic yards per tower	71.3 cubic yards per structure	
Constructability	Cranes and/or Helicopter		Helicopter construction not as efficient/effective with TSP H-frame structures.
Maintenance Activities	Live-line maintenance - similar. Helicopter maintenance - similar.		
Estimated Costs(excluding ROW costs)	Single-circuit 500-kV lattice would be approximately 5 to 15% less than TSP H-frame.		
Visual Appearance	An LST is on average 23 feet taller than the TSP H-frame. However, one can see through the framework of an LST.		
Perching	The TSP has fewer and larger structural members than the LST resulting in fewer perching opportunities.		

Tubular Single-Pole

Tubular single-pole tangent structures are self-supporting, but angles and corners typically require guyed structures. While H-frames can achieve lateral stability against the weight of the conductor and ice and wind conditions by virtue of the braced H-frame design, single-pole structures require deeper foundations and heavier steel poles to provide the same lateral stability, because each pole must be designed to independently withstand operational and ice and wind loads. Single-pole structures are more expensive to purchase and install, offer no technical or operational advantage over the proposed H-frame structure, and were therefore not carried into detailed analysis.

Single-Circuit Tubular H-Frame Design Considered for Detailed Study

The single-circuit 500-kV steel pole H-frame structure is more expensive than the lattice tower alternative. Table 2.6-2 compares the single-circuit lattice steel tower and single-circuit steel pole H-frame ROW configurations for several factors. The Proponents do not wish to propose this alternative as a Project-wide option, but propose that, where needed for mitigation, the H-frame tangent configuration for single-circuit 500 kV is feasible. Therefore, this alternative is carried forward for consideration as a mitigation measure where the use of lattice towers presents an increased adverse impact to scenic resources.

The Proponents consider the use of H-frames feasible for use as tangent (in-line structures) but not feasible for angle or dead-end structures for tangent use.

2.6.2 Structure Finish and Surface Treatment Alternatives

The proposed surface finish for the 500-kV single-circuit lattice structures is a galvanized finish, treated after the initial galvanizing process to produce a dulled finish to reduce surface reflectivity. This process results in an installed tower with more visual

absorption, which allows the structures to blend in better with the terrain while at the same time preserving the corrosion resistant properties of the galvanized coating on the steel. The 500-kV transmission line lattice structures would be specified to have a dull galvanized finish. The Proponents have agreed to use self-weathering steel for the 230-kV and 345-kV tubular steel pole (H-frame) structures. There are two other steel finishes that are used in the industry on transmission line structures, including painting and the use of weathering steel as a material for tower fabrication.

2.6.2.1 Painting

Painting of the lattice tower structures is not proposed and is considered operationally and economically infeasible by the Proponents for several reasons:

- Unlike a galvanized surface, which would provide corrosion protection and preserve the surface appearance of the steel for decades, a painted surface would require repainting several times during the life of the Project to maintain the painted surface and the desired appearance. The need to keep up with the painting of the structures would create an added expense during operation and maintenance of the transmission lines. It would also create a safety risk for workers.
- The 500-kV transmission line circuit would have to be de-energized to repaint each of the structures. Given the importance of the Gateway West 500-kV transmission lines to the reliable operation of the western United States transmission grid, taking the circuits out of service for painting would not be feasible from either a transmission operations or economic perspective.
- While the need to paint the structures would add cost, the need to de-energize the circuits during painting would result in much greater added costs for replacement transmission or energy if a circuit were taken out of service. Operational experience over the last several decades has shown that because of the importance of these 500-kV bulk power lines to the system, an outage of a circuit is difficult to schedule, and even then there are only very short windows (days) in the spring and fall when an outage is possible.

2.6.2.2 Weathering Steel

Weathering steel is a group of steel alloys that were developed to eliminate the need for painting. This type of steel alloy forms a stable rust-like appearance if exposed to the weather for several years. This is because during the wetting and drying cycles due to weather, it rusts and forms a protective layer on its surface. This layer protects the surface of the steel, prevents further rusting, and the layer develops and regenerates continuously when subjected to the influence of the weather. Weathering steel is commonly used by the Proponents, and throughout the industry, when tubular steel structures are specified for transmission lines.

The use of weathering steel for lattice towers is not practical or recommended. Lattice towers are composed of many members of various sizes of steel angles, bolted together in a latticework to form the tower. The bolts holding the members together are torqued to a specific tightness during construction. The tightness of each of the bolted connections on the tower is essential to maintain the rigidity and strength of the tower.

With a galvanized steel surface, the surface does not degrade and so the bolts stay tight and the integrity of the tower is maintained. On the other hand, attempts to use weathering steel on lattice towers have demonstrated a phenomena now known as "pack-out." Pack-out occurs when the weathering steel under the bolt head or washer rusts and expands to form the protective layer during the weather cycles. Pack-out has the effect of loosening or breaking the bolted connections on the tower, thus compromising the tower's rigidity and structural integrity, which is why weathering steel is not used for lattice transmission structures.

2.6.3 Underground Alternatives

Several scoping comments were received requesting consideration for installing the transmission lines underground. In theory, burying transmission lines would eliminate many of the visual impacts and would reduce the susceptibility of the system to weather and fire hazards. In response to the request, the BLM requested that the Proponents provide a data response on the existing technology and the engineering feasibility of underground technology applicability to the Project. This section is based upon their response.

The Proponents have proposed the construction of a 230- and 500-kV AC overhead system as part of the larger United States AC electrical grid. Their response discusses the techniques and feasibility for placing 230- or 500-kV AC systems underground. Additional comments were received January 14, 2013, requesting that the BLM consider requiring the Proponents to change to a DC system, at least in part, because many of the stated objections to using underground construction could be resolved using DC rather than AC systems (Balfour 2013). The BLM therefore examined the feasibility of requiring the Proponents to adopt a technology not directly compatible with the existing United States electrical grid in order to consider underground installation as a DC system. That discussion is found in Section 2.6.3.4, below.

While underground systems are relatively immune to weather conditions in comparison to overhead lines, they are vulnerable to washouts, seismic activity, and inadvertent excavation, all resulting in extensive and time-consuming repairs. They are also subject to joint failure, a serious concern because it is hard to locate and repair (Patrick Engineering 2010). From a visual perspective, reactive compensation stations, similar to a substation in appearance, would be required every 7 to 20 miles depending on the voltage level, terrain, and cable technology for 230-kV and 500-kV underground lines. Combined with the typical open-cut trench excavation required for the entire length of the transmission line route, the visual impacts would be noticeable, although substantially less than an overhead line.

The Proponents report that while recent research is developing new techniques for manufacturing, design, construction, and maintenance of underground transmission lines, there are several important issues that make the technology for extra high voltage transmission lines impractical for long length installations as described below:

- Environmental—While access road requirements are similar for both underground and overhead lines, underground transmission lines require a continuous excavation through all habitat types. This is in contrast to overhead

lines, which result in a disturbance only at the structure locations. Furthermore, the potential for fluid leaks and pipe corrosion creates additional environmental concerns, much like pipelines.

- Reliability—While underground systems comparatively have fewer forced outages than overhead lines, damage to the cable or components often results in longer outage durations. When a failure does occur, overhead lines can be quickly visually inspected and repaired. In contrast, underground line cable failures cannot be visually diagnosed. The cable system must be tested with specialized equipment to locate the damaged sections of the cable. Upon locating the faulty component or cable, specially trained workmen must be mobilized to repair or replace the failed components or cable resulting in potential outages of weeks or months; depending on the type of failure to be repaired, the failure location, and the availability of replacement materials.
- Reactive Power Compensation—The capacitive characteristics of the underground cable insulating material and the proximity of the cables to one another results in the cable system introducing high capacitive reactive loads onto the electrical system. These capacitive reactive loads would have to be offset with inductive compensation at above ground compensation stations located every 7 to 20 miles along the transmission line route. A further consideration is that the electrical system as a whole may or may not be capable of reliably accommodating these large reactive power loads, making the integration of long underground AC powerlines into the overall power grid questionable or infeasible.
- Cost—One major reason that utilities do not normally install extra high voltage transmission lines underground is that the construction costs are increased by 12 to 17 times over the aboveground alternative (National Grid 2009). More recent studies have shown that costs may be reduced but are still 10 to 12 times the cost of equivalent overhead installation (Patrick Engineering 2010). These additional costs must be approved by the public utilities commissions and are passed on to all the ratepayers, not just those near the area of underground installation.

2.6.3.1 Underground Technologies

For both 230-kV and 500-kV AC underground transmission lines, a number of cable technologies exist. While some have long running track records of high reliability, others are relatively new and untested. At the 500-kV voltage level, only a few underground installations exist, namely in Japan and China. Within the U.S., 500-kV underground installations are limited to test sections, while 230-kV systems have been utilized in urban environments for a number of years. Alberta Electric Systems Operations is conducting a Feasibility Study to place approximately 12 miles underground on the Heartland Transmission Project (AESO 2010).

There are four basic technologies to consider for both 230-kV and 500-kV AC underground circuits:

- Solid Dielectric (Cross-Linked Polyethylene [XLPE]);

- Gas Insulated transmission Line (GIL);
- Pipe-type (High Pressure Fluid-Filled [HPFF]); and
- Self-Contained Fluid Filled (SCFF); and
- Superconducting Cables.

Solid Dielectric Cable—Considered only for distances of up to a few miles at the 500-kV voltage level, solid dielectric insulation or XLPE cable construction has been used only in special situations. While the technology is progressively emerging, lack of practical experience results in major reliability concerns for operating larger scale 500-kV underground systems. At the 230-kV voltage level, solid dielectric cables have been selected for numerous cable installations both in the U.S. and worldwide. This cable technology has the benefits of a simplified installation method, in turn reducing operations and maintenance costs compared to other cable systems, while maintaining a high level of reliability.

Gas Insulated Transmission Line—GIL technology at the 230-kV and 500-kV voltage levels has been implemented primarily within substations and not for longer transmission lines. GIL has been incorporated into substation designs with the length typically limited to distances less than 1,000 feet. However, the high cost and lack of experience with longer underground transmission lines, as well as questions of reliability, are more of a concern than with the other more prominent cable technologies.

High Pressure Fluid-Filled Cable—HPFF cable systems are a pipe-type system in which three single-phase cables are located within a single steel pipe. HPFF cables use Kraft paper insulation or a laminated polypropylene paper insulation that is impregnated with dielectric fluid to minimize the insulation breakdown under electrical stress. Since the system requires a continuous high pressure, pumping plants are required every 7 to 10 miles along the route, assuming relatively flat topography. The pumping plants are responsible for maintaining a constant pressure on the system, but must have large reserve tanks to facilitate the expansion and contraction of the dielectric fluid as the system undergoes thermal cycling. To maintain an operable pipe-type system, cathodic protection must be applied to the cable pipes to mitigate corrosion. This in turn helps prevent fluid leaks, which pose both an operational and an environmental concern. Using an HPFF system does provide high reliability but it also requires additional equipment, resulting in

HPFF Pipe Installation

additional opportunity for component failure, while specially trained personnel are required to maintain these systems. Industry sponsored testing has proven that this technology can operate at the 500-kV voltage level; however, there are no 500-kV HPFF pipe-type systems currently installed within the U.S. and few installations can be found throughout the world. That being said, of the available cable technologies, an HPFF cable system may be considered the most logical for a 500-kV system.

Self-Contained Fluid Filled Cable—SCFF cable systems are similar to the HPFF systems. The cable is typically constructed around a hollow tube, used for fluid circulation, and uses the same Kraft paper or laminated polypropylene paper insulation materials. Because the fluid system is "self-contained," the volume of fluid required is less; however, the same distribution of pumping plants would be required. While SCFF cable systems have the longest running history at the extra high voltage levels, their use is typically restrained to long submarine cable installations. This technology has been implemented on inland applications with high reliability at both the 230-kV and 500-kV voltage levels.

Superconducting Cables—Research is currently underway in the advancement of high-temperature superconductors. Utilizing a unique cable design where all three phases are centered concentrically on a single core, the cables are capable of displaying low electric losses with the same power transfer capabilities as a standard non-superconducting cable. The core, filled with a cryogenic fluid, supercools the conducting material resulting in extremely low losses and high electrical power transfer capacities. Most high temperature superconductor systems are located adjacent to large metropolitan areas, where they are capable of transferring large quantities of power a few thousand feet, at the distribution level. However, technological advances in the last few years have seen the first 138-kV AC system installed in Long Island, New York, in early 2008. Because high-temperature superconductor systems have neither been established at the 230-kV or 500-kV voltage levels nor over long distances, superconducting cable would not be a technology option to consider for Gateway West.

High Temperature Superconductor AC Cable Design

Design of Cable Systems

The following are key considerations for underground transmission line design for both 230-kV and 500-kV cable systems:

- Both 230-kV and 500-kV cable systems would consist of multiple cables per phase to achieve the target power transfer requirements and to provide redundancy in the case of a cable failure.
- Concrete encased duct banks would be installed at a minimum cover depth of 3-feet, or as required by routing design, and would be backfilled with specially engineered thermally favorable backfill to assist in heat dissipation.

- To obtain further redundancy, multiple duct banks per circuit can be utilized to minimize common mode failures of the cable installation.
- Depending upon installation location, a permanent access road approximately 14-feet wide may be required to perform operation and maintenance procedures.
- The total construction surface impact of the underground cable system is at a minimum approximately 30 feet, and includes any permanent access roads.
- Splicing of the cable would be required approximately every 1,500 to 2,000 feet. Splicing would be performed inside large underground vault structures. Vault dimensions would be approximately 12 feet wide by 28 to 40 feet long by 8 to 9-feet deep depending upon the cable manufacturer splice and cable racking requirements.
- Depending on the terrain characteristics, burial depths may need to be increased to avoid heating the soil and changing the conditions of the vegetation and wildlife habitat above the duct bank or pipe type cables.
- Underground to overhead transition stations would be required at each end of the underground transmission line, and at each intermediate reactive compensation and pumping stations. Requiring 2 to 4 acres, each site would consist of pedestal-type termination structures, reactors (similar to a large power transformer in appearance), and pumping plants, dependent upon cable system. In addition to these structures, A-frame dead-end structures, approximately 80 feet tall, would be required at each end of the system.
- Underground to overhead transitions at the 230-kV level can be accomplished with a single steel structure design if a solid dielectric cable system is implemented.
- Pumping plants would be required every 7 to 10 miles along the route, for either HPFF or SCFF cable systems.
- Reactive compensation would be required every 7 to 20 miles along the route to offset the capacitive reactance of the cable system, depending on the cable technology employed and electrical system requirements.

Reliability and Maintenance

Long-term reliability of underground cable systems is a major concern. While 230-kV underground lines have been used extensively, 500-kV lines are largely an unproven technology, as they have been implemented in a limited number of circumstances. In conjunction with their limited use, all installations to date have been relatively short compared to the Gateway West Project, raising concern about the reliability of an extensive cross-country cable system. A catastrophic failure of any portion of the system—underground cable, splices, terminations, or fluid systems—could result in the cable system being inoperable and out of service.

The Everglades National Park commissioned an independent study from Patrick Engineering, which concluded that the only reliable way to place a 500-kV transmission line that was part of the critical national grid underground was to include a redundant circuit for the entire distance. This is required because the detection, repair, and

recommissioning of an underground failure in one of the circuits could take many days (Patrick Engineering 2010).

Basic maintenance of the aforementioned cable systems consists of a thorough yearly inspection, while any fluid systems must be inspected and tested monthly. Inspections include all terminations and splices, all bonding systems, as well as all valves, gauges, switches, and alarms within the pumping plant. Cathodic protection systems are monitored as an ongoing process.

2.6.3.2 Construction Process

For both the 230-kV and 500-kV voltage levels, the installation of underground transmission lines uses similar techniques. Large open trench installation or the more costly trenchless technologies are utilized to place the cables underground. Construction includes, but may not be limited to clearing of the ROW, trenching, installation of duct banks or pipe networks, installation of vaults, cable splicing and terminating, and termination structure construction.

Trenching—Generally the most common technique for placing underground lines, open cut trenching utilizes a large surface excavation to place the required infrastructure. The typical trench dimensions vary by cable type, voltage level, and required power transfer, but in all cases require a minimum cover depth of 3 feet (see Figure 2.6-1). While a number of cable arrangements can be achieved, soil characteristics and existing infrastructure often play the largest role of how the installations are designed. Trenching operations are typically staged such that a maximum of 300 to 500 feet of

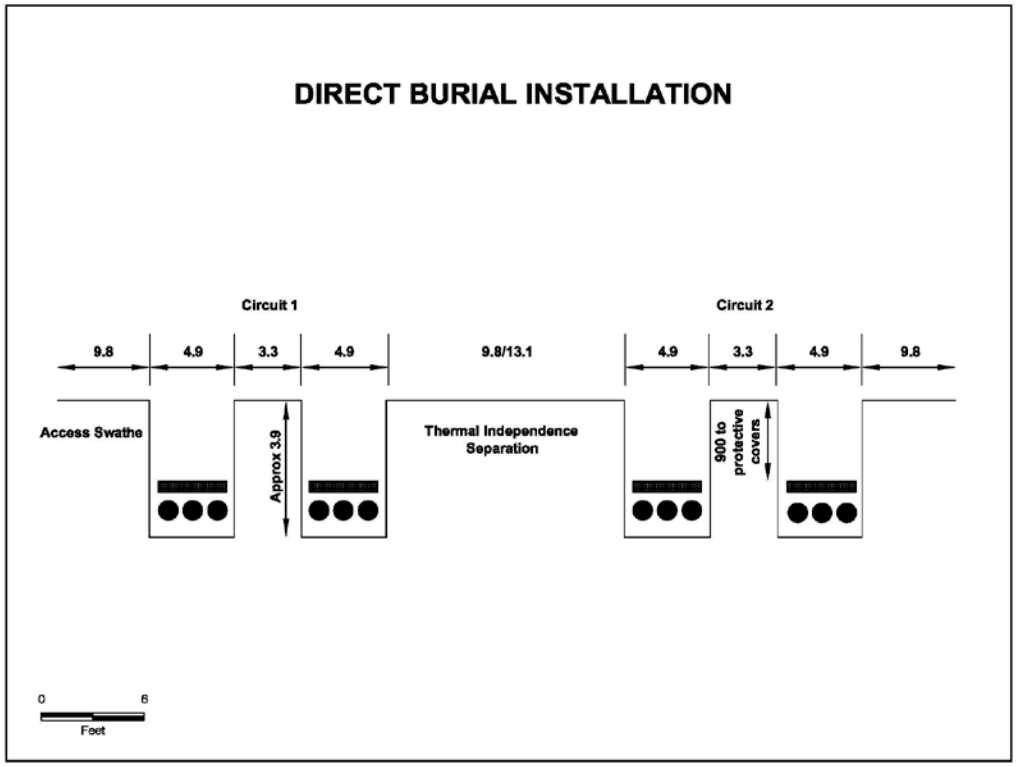


Figure 2.6-1. Direct Burial Installation

trench is open at any one time. Steel plating may be positioned over the open trench to minimize surface disruptions, while traffic controls alleviate congestion through the project area. Emergency vehicle and local access must be coordinated with local jurisdictions as necessary.

Installation—Single- and double-circuit solid dielectric cable systems are often installed in duct bank configurations. Another method is duct burial. Figure 2.6-1 illustrates the space requirements. Figure 2.6-2 also shows a cable construction ROW.

Figure 2.6-2. Cable Construction ROW with Single Cable Trench Open

Pipe-type cable systems use steel pipes to encase each set of cables. Pipe-type cable systems can be utilized both at the 230-kV voltage level and the 500-kV level.

Vault Installation—In a vault installation, preformed concrete splice vaults are placed at approximately 1,500- to 2,000-foot intervals depending on the maximum cable per reel length. The vaults, initially used to install the cables into the conduits, are primarily used to house the splice assemblies, and to provide access for yearly inspections of the system. The vaults are used to sectionalize segments of cable in the event of a failure to locate the faulted cable and repair the required section. The typical installation time frame of each vault is approximately one week beginning with excavation, placement, compaction, and finally resurfacing of the excavated area.

Cable Pulling, Splicing, and Termination—Upon completion of the civil construction, cables are installed within the duct banks or steel pipes. Each cable segment is installed, spliced at each of the vaults along the route, and terminated at the transition sites where the cable connects to overhead conductors. To install the cable, a reel of cable is positioned at one end of a cable section, while a pulling rig is located at the other end. Using wire rope, each section of cable is installed into its respective conduit/steel pipe, while workers apply either water-based lubricant for solid dielectric cable or dielectric fluid for pipe type cable, to the cable jacket to minimize the frictional forces placed on the cables. Before termination or splicing operations begin, the cables are trained into the correct position using heat blankets. This process removes the

curvature of the cable from being on the reel while also relieving any longitudinal strain exerted on the cable during pulling operations.

Termination Structure Construction—Depending upon the cable technology used, at the 230-kV voltage level either single structure transitions or larger transitions sites, resembling those of 500-kV lines, are required. Because of the large size of cable equipment required for 500-kV lines, large transition sites are the only option. Figure 2.6-3 shows a typical transition station.

Figure 2.6-3. Typical Overhead to Underground Transition Station

Special Construction Methods—In locations where open trench construction is not feasible, such as water crossings, airports, railway crossings, large roadway interchanges, etc., methods of trenchless installation must be utilized. Three main types of trenchless technologies exist. These are:

- Jack and Bore Tunneling
- Horizontal Directional Drilling
- Microtunneling

Jack and Bore Tunneling—Jack and bore tunneling is an auguring operation that simultaneously jacks or pushes a steel casing into the excavated cavity. As the equipment progresses forward, subsequent casing segments are added, while the spoils are removed through the center of the casing. Upon completing the crossing, the duct system is positioned inside of the steel casing using specially designed spacers, and the entire casing is then backfilled with thermally designed grout. The grout not only solidifies the installation from any movement, but also helps dissipate heat away from the cable system. For pipe type cable systems, the jacked casing can double as the cable pipe and may be welded to the trenched cable pipe.

Horizontal Directional Drilling—The horizontal directional drilling method uses a steerable cutting head to create a pilot hole along a predetermined route. Using progressively larger reamers, the hole is enlarged to the intended diameter. A product casing is then pulled through the hole and duct work, using specially designed spacers, is positioned within the casing. Grout is pumped into the voids within the casing to secure the installation and assist with the thermal transfer of heat away from the cable system. As with the jack and bore method, the casing can be used as the cable pipe in a pipe type cable system.

Microtunneling—Microtunneling resembles the jack and bore method; however, the casing diameters and distances can typically be increased. Microtunneling uses a remotely operated tunneling machine to create the desired diameter hole. A casing is

then placed into the excavated hole and duct work is positioned within the casing. As before, the casing is filled with grout, or the casing can be used as the product pipe in a pipe-type cable system.

2.6.3.3 Construction Time

Installing large segments of underground transmission lines can require as much as twice the construction time of overhead lines, if not more, due to the extensive excavation required to complete the trenching and installation of the cable system infrastructure, cable splicing, and construction of transition stations.

2.6.3.4 HVDC Options

The U.S. electrical grid operates using AC. However, it is feasible to use high-voltage direct current (HVDC) transmission lines to interconnect a generation source and the larger grid. This is in common usage in Europe, where offshore wind farms interconnect to the onshore grid using HVDC submarine cables. It is also considered and sometimes applied in the United States to interconnect wind farms and the existing AC grid using overhead lines, such as the proposed Transwest Express project.

Most in-service uses of HVDC in the United States are to interconnect new generation to the nearest substation in an AC system and most are above ground. In Brazil, the HVDC transmission line that links a large hydropower project with the existing grid in Sao Paulo using 600 kV is all aboveground (805 kilometers or 503 miles). Two impressive long-distance HVDC lines in China are all aboveground and link large hydropower facilities with an existing grid. In each case, the HVDC lines are used to transport power from a single generation source to an existing grid. One exception is the largest known HVDC underground system, constructed in Australia and in-service since 2002, which is 180 kilometers (113 miles) long, uses 150 kV (relatively low voltage), and allows up to 220 MW of electrical power to be traded between the two states, each with an existing grid. Each of these lines is referenced in material supplied by either Siemens or ABB (cable manufacturers and promoters of their products) on the Internet (references available in the Administrative Record for this Project). Advantages include reduced construction costs of the line itself, fewer conductors, and reduced electrical losses over long transmission distances. In addition to greater cost, disadvantages include much greater ground disturbance due to the need to dig a trench the entire length of the line, including through wetlands and streams.

Underground installation for HVDC has the same costs and limitations as HVAC, with the exception that HVDC does not require the same level of insulation and management of waste heat as HVAC. Disadvantages of using HVDC are principally related to interconnection expenses and the need for ground electrode facilities. To interconnect HVDC to the United States grid requires converter stations, 50 to 100 acres, at a cost of approximately $50 million each, per interconnection. Thus, to consider installation of a portion of Gateway West as underground HVDC would require two converter stations, one at each end. These converter stations would be constructed in concert with the transition stations needed to provide the bridge between overhead and underground systems. Ground electrode facilities are needed near the converter stations and would occupy up to 600 acres each to allow for the discharge of the electricity in the case of a system failure.

The Proponents are responsible for a portion of the United States' AC electrical grid. The proposed Project is an expansion of an AC system and must transfer power among its own components and the existing and future components of the AC system. Given that HVDC does not offer compelling advantages, would not be compatible with the purpose and need of a backbone system improvement for the United States electrical grid, and would be substantially more costly when the converter stations are taken into account, HVDC underground is not considered a reasonable alternative for this project.

2.6.3.5 Conclusion

Underground cable system installation has historically been justifiable in terms of cost and reliability only in urban or metropolitan areas, and for limited distances. Because of the high cost of an underground line compared to overhead 230-kV and 500-kV lines, unproven technology over long distances for 500-kV, reliability and reactive compensation issues for long installations, and increased land disturbance, the alternative of placing the 230-kV or 500-kV Gateway West lines underground as either AC or DC was not considered feasible for the Project.

2.7 COMPONENTS COMMON TO ALL ACTION ALTERNATIVES

Regardless of the route chosen or the structure type or configuration chosen, the construction, operations, maintenance, and decommissioning of the transmission line would be conducted in the same manner. This section provides a general outline, description, and references portions of the Proponents' POD (Appendix B of this EIS), which provides details on each Project component. This section is organized into four parts based on information provided by the Proponents. The first part describes the components of the transmission line system, including the transmission line itself and its supporting structures, substations, and the communication system. The second part describes the construction techniques and addresses both the permanent alterations and the temporary disturbances needed as well as providing a description of the construction workforce, equipment, and traffic. The third part describes the operations and maintenance of the new system, while the fourth part discusses decommissioning and restoration of the ROW.

2.7.1 System Components

The new transmission system is composed of the transmission structures themselves, the conductors, other hardware, the communications system, access roads, and substations. Each is summarized below and detailed in Appendix B.

2.7.1.1 Land Requirements and Construction Disturbance

Transmission Line and Substation Components in Appendix B to the Final EIS includes details of the typical ROW land areas needed for the various components over the operational life of the Project. This represents the land the Proponents would encumber with easements, leases, ROWs, or other legal instruments to permit and protect the construction, operations, and maintenance of the Project. This is a greater area than that disturbed by the Project during construction, because transmission line disturbances are limited to the areas of structure installation and access roads. Temporary facilities like material laydown and fly yards are the exception and are areas that would be disturbed only during construction. Because it is fairly common that these

yards would be located outside the requested ROW, their disturbance footprint must be added to the overall disturbance footprint within the ROW.

In addition to discussing the construction disturbance, Appendix B includes a discussion of how private easements would be obtained for the Project.

2.7.1.2 Transmission Line System

"Transmission Line and Substation Components" in Appendix B describes transmission structures, including their types and sizes, the clearances needed between phases of the system and between the lowest conductor and the top of vegetation, and their foundations. It goes on to describe the conductor types and the other hardware used. Both steel H-frames and lattice steel towers are detailed.

2.7.1.3 Communication System

To control the transmission line and manage the flow of electricity, a sophisticated communication system is required. This communication system's backbone is a fiber optic system contained within one of the overhead grounding wires carried along the length of the transmission system. The fiber optic signal needs to be "boosted" or regenerated about every 55 miles along the system, requiring optical signal regeneration stations. These stations consist of a building 12 by 32 by 9 feet tall, a fenced yard, access road, and distribution power supply from the local distribution system. They are typically built as close to the transmission line as land use and physical features allow. Details are found in "Transmission Line and Substation Components" in Appendix B.

2.7.1.4 Access Roads, Multipurpose Yards, and Fly Yards

"Transmission Line and Substation Components" in Appendix B specifies the typical access roads and the general description for laydown yards. Exact locations for both roads and yards will be developed during the detailed design phase, but preliminary design has provided indicative locations for roads and laydown yards along the entire ROW. These indicative locations have been used in GIS to develop the "disturbance footprint" of the Project. While the majority of the access roads and fly yards to be used by the Project would be within the ROW requested, some access roads, fly yards, and multipurpose yards would be outside the ROW. With few exceptions, all access roads are considered permanent, although most will only be used infrequently to meet maintenance requirements. Operation roads and structure construction pads would be revegetated but not recontoured. Multipurpose and fly yards are temporary disturbances or temporary uses of areas already developed for storage or other industrial uses.

2.7.1.5 Substations

The description of substations includes their access roads, the types of buildings, transformers, and other infrastructure needed to convert incoming voltage to either another long-distance transmission voltage or to a lower voltage appropriate for distribution to load centers nearby. Details of substation contents are found in "Transmission Line and Substation Components" in Appendix B and mapped in Appendix A, Figures A-13 through A-24.

2.7.2 System Construction

2.7.2.1 Transmission Line Construction

The installation of transmission structures requires preparation of each site where a structure would be installed, including vegetation removal and grading to obtain a relatively flat surface for the operation of the large cranes used to install the structures. Where structures are to be installed on steep slopes, the needed cut and fill to produce a flat work area may total up to 3 times the acreage of the work area itself. Then, either the directly embedded H-frame structure piers need to be drilled or excavated to accept the two poles of each structure, or else four foundations for each of the four legs of the lattice steel towers must be established. Appendix B, Table B-2 describes in detail the ranges of foundation sizes, depths, and amounts of concrete needed for each. In addition to the general description of foundation installation, "Transmission Line and Substation Components" in Appendix B discusses the procedures if rock is encountered and blasting is needed. After the holes are dug for H-frame installation or the foundations completed for the lattice steel towers, the structures are brought in either by truck or by helicopter. If ground transportation is used, cranes would be employed for lifting and installing the structures. Structures are assembled at fly yards if helicopters are used (see "Transmission Line and Substation Components" in Appendix B specifying helicopter use procedures).

After the structures are assembled and in place, the conductors and the overhead ground wires would be strung from tower to tower. This is generally accomplished using a helicopter but may be conducted from the ground if the access road travels directly between towers. Details are found in "Transmission Line and Substation Components" in Appendix B.

2.7.2.2 Communication Systems

Construction of the fiber optic "backbone" of the communication system would be accomplished at the same time as the conductors are strung. Regeneration station construction is also detailed in "Transmission Line and Substation Components" in Appendix B.

2.7.2.3 Substation Construction

"Transmission Line and Substation Components" in Appendix B provides details of substation construction, including development of all-weather access roads, staging areas, clearing and grading of the site, establishment of grounding mats and systems, fencing, foundation excavation, structure and equipment installation, oil containment system installation, control building installation, and finally cleanup and landscaping.

2.7.2.4 Construction Elements

"Transmission Line and Substation Components" in Appendix B concludes by providing details of the construction workforce to be employed, the construction equipment and likely daily traffic patterns during the peak of construction, and the proposed construction schedule. Removal of temporary facilities and waste disposal are also discussed.

2.7.3 Operations and Maintenance

The Proponents have prepared Project-specific operations and maintenance policies and procedures designed to meet the requirements of the NERC, WECC, and the state public utility commissions, while remaining in compliance with the applicable codes and standards with respect to maintaining the reliability of the electrical system. Operations and maintenance activities would include transmission line patrols, climbing inspections, tower and wire maintenance, insulator washing in selected areas as needed, and access roads repairs. Periodic inspection and maintenance is also a key part of operating and maintaining the electrical system. The following key topics are described in detail in "Transmission Line and Substation Components" in Appendix B:

- Routine system inspection, maintenance, and repair;
- Transmission line maintenance;
- Hardware maintenance and repairs;
- Access road and work area repair;
- Vegetation management; and
- Substation and regeneration site maintenance.

Chapter 3 contains additional mitigation measures identified by the agencies to protect resources, as summarized in Section 2.7.5 below.

2.7.4 Decommissioning

The projected life of the Gateway West Project is 50 years. Typically, transmission lines that have been maintained through that period will continue to provide service for a much longer lifetime. At the end of the service life of the Project, assuming that it is not upgraded or otherwise kept in service, the structures and conductors would be removed. The substations and regeneration stations, if not needed for other existing transmission line projects, would also be removed. "Transmission Line and Substation Components" in Appendix B provides information regarding the removal of materials and the restoration of the sites.

2.7.5 Proposed EPMs and Agency Mitigation Measures

As part of their Proposed Action, the Proponents have included measures designed to reduce or avoid environmental impacts. Identified as EPMs, these measures cover the following topics:

- Construction, operations, and maintenance;
- Visual resources;
- Cultural and paleontological resources;
- Plant and wildlife resources, including TES;
- Geologic hazards and soil resources;
- Water resources;
- Safety measures;
- Reclamation of construction activities;

- Land use and agriculture;
- Traffic and transportation management;
- Air quality;
- Electrical environment;
- Public safety; and
- Noise.

The Proponents' EPMs are presented in Appendix Z to the POD, also included in Appendix B to this EIS. Many of the EPMs were developed in cooperation with the BLM and cooperating agencies. As a part of the Proposed Action, EPMs would be followed on all routes, as site-specific circumstances dictate and as identified in the POD and in Table 2.7-1 below (see columns 7 to 9 for the areas where each EPM would apply).

The BLM has not modified EPMs because they are a part of the Proponents' proposal. However, the BLM or cooperating agencies identified additional avoidance-minimization-mitigation measures in the Draft EIS when they determined that an EPM is insufficient to protect affected resources or is not consistent with agency requirements. These additional measures were referred to as Agency Proposed Mitigation Measures in the Draft EIS. The Proponents have adopted many of these mitigation measures and they have become EPMs in the Final EIS. As a result, many of the original EPMs have been dropped or modified, as have many of the Agency Proposed Mitigation Measures included in the Draft EIS.

Table 2.7-1 presents a summary of the Proponents' proposed EPMs as well as the mitigation measures required by the BLM and cooperating agencies. The table also identifies where each measure would apply (federal, state, and/or private land). The effects analysis, found in Chapter 3, was conducted based on the Project description, including the Proponents' revised EPMs.

Table 2.7-1. Proposed Environmental Protection Measures

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OPERATIONS AND MAINTENANCE								
G-1	G-1	Resource Management Plan (as amended) design criteria, Best Management Practices (BMPs), and mitigation requirements will apply on BLM-managed lands.	•	•	•	•		
G-2	G-2	Forest Plan Standards and Guidelines (as amended) will apply on National Forest System (NFS) lands. Ground-disturbing and vegetation management activities will comply with all Agency-wide, regional, and state BMPs.	•	•	•	•		
–	G-3	Third-party Environmental Construction Inspection Contractor (CIC) Monitors approved by the Agencies will monitor construction activities. Monitoring activities will be structured in accordance with the Environmental Compliance Management Plan included as Appendix C of the Plan of Development.		•		•		
–	G-4	All wildlife and plant surveys/pre-construction surveys will be considered as “casual use” activities and will not be restricted or prevented to occur due to overlapping season and temporal restrictions.		•		•		
OM-1	OM-1	The Proponents will comply with the road maintenance standards of the federal or state agency controlling the land.		•	•	•	•	•
OM-2	OM-2	Roads will be maintained to have crossroad drainage in order to minimize the amount of channeling or ditches needed. Water bars will be installed at all alignment changes (curves), significant grade changes, and as requested by the federal or state agency.			•	•	•	•
OM-3	OM-3	All access road drainage structures, constructed and installed for Proponent use only, will be maintained or repaired by the Proponents during operations and maintenance (O&M) activities or emergency response.			•	•	•	•
OM-4	OM-4	Although routine and corrective O&M is of limited duration and impact, the Proponents will attempt to adhere to specific closure periods and areas and are proposing not to conduct any routine and corrective O&M activities during the timeframes and at the locations identified in Table R-1 in Appendix R of the Plan of Development to the greatest extent practical. The appropriate federal or state agency will notify the Proponents of any spatial or temporal restrictions that are in effect for the Project area (e.g., fire restrictions).		•	•	•	•	

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OM-5	OM-5	Existing improvements (fences, gates, etc.) will be repaired or replaced if they are damaged by O&M activities, as agreed to by the parties involved.			•	•	•	•
OM-6	OM-6	The Agencies may restrict general public access to closed federal or state roads and access roads that the Proponents maintain (Proponents will maintain access roads constructed for Proponent use only). In cases of restricted access, the Proponents will physically close the road with a gate. Gates will be locked with both a lock supplied by the Proponents and with a federal agency lock. This access management plan will be updated as necessary to reflect current road closures and gate locations.		•	•	•	•	
OM-8	OM-7	Any integrated vegetation management (IVM) control method, including those listed on pages 9 and 10 in Appendix R of the Plan of Development, may be used to control the growth of trees and tall shrubs to maintain clearances, the IVM recommended wire and border zones as indicated in Table R-2 [page 10 in Appendix R of the Plan of Development] and improve access to facilities.			•	•	•	•
OM-9	OM-8	Any IVM control method including those listed on pages 9 and 10 in Appendix R of the Plan of Development may be used to control the growth of additional vegetation to maintain clearances, the IVM recommended wire and border zones as indicated in Table R-2 [page 10 in Appendix R-1], and improve access to facilities.			•	•	•	•
OM-10	OM-9	Where possible, low-growing vegetation and small tree species within the ROW that will not grow into the minimum required clearance distance will be left in place; trees may be removed on a subsequent maintenance cycle as they increase in size. Hazard trees are typically those trees or snags within or adjacent to the ROW that are likely to interfere with or fall into transmission lines or associated facilities. Hazard trees and other "hot spots" (high priority areas requiring vegetation management actions) are identified during routine line inspections and removed annually. In addition to hazard trees, other critical conditions that may require immediate attention include trees that interfere with transmission conductors and trees whose growth will not allow safe clearance until the next scheduled maintenance cycle.			•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OM-11	OM-10	Any control method may be used for vegetation maintenance on access roads; this is typically scheduled at the same time as vegetation maintenance within the ROW. However, in cases where vegetation grows quickly, removal may occur annually. Vegetation that will not interfere with the safe operation of vehicles and equipment will be left in place.			•	•	•	•
OM-12	OM-11	Slash will be lopped and scattered throughout the surrounding land. Stumps resulting from vegetation treatments will not be over 1 foot tall (unless the tree is not able to be safely cut at or below one foot from the ground surface), and lopped slash will be left as close to the ground as possible. Lopped slash will be a maximum of 18 inches in length for small trees and limb wood. If the federal land managing agency determines that fuel levels are unacceptable, they shall notify the Proponents and develop a mutually agreed upon method to reduce fuels. This may include, but is not limited to, chipping.			•	•	•	•
OM-13	OM-12	Hazard trees will be felled in a direction away from the ROW. Slash and limbs that fall within the ROW will be treated as described above; boles of trees greater than 8 inches will be left in place.			•	•	•	•
OM-14	OM-13	Any chemical control will be done in accordance with any applicable local, state, and federal rules and regulations. Herbicides or other chemical control will be selected from the BLM and Forest Service's list of previously approved herbicides and in accordance with any herbicide plans. If the federal land managing agency determines that a previously approved herbicide and/or plan is unacceptable, they shall notify the Proponents.			•	•	•	•
OM-16	OM-14	Before beginning an O&M project on federal or state land, the Proponents or their subcontractors will clean all equipment that will operate off-road or disturb the ground. Tracks, skid plates, and other parts that can trap soil and debris will be removed for cleaning when feasible, and the entire vehicle and equipment will be cleaned at an off-site location.			•	•	•	•
OM-17	OM-15	To help limit the spread and establishment of noxious weed species in disturbed areas, desired vegetation needs to be established promptly after disturbance. The Proponents will rehabilitate significantly disturbed areas as soon as possible after ground-disturbing activities and during the optimal period. Seed and mulch will be certified "noxious weed free" and seed mix will be agreed to in advance by the landowner or land managing agency.			•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OM-18	OM-16	Routine and corrective O&M activities in streams with sensitive fish species will occur from July 1 to September 1 in an effort to minimize impact to spawning and migration activities. These activities include, but are not limited to, culvert installation and or replacement, stream bank stabilization. Fording streams at existing crossings on existing roads (e.g., dip, culvert, bridge) will occur as necessary throughout the year.			•	•	•	•
OM-19	OM-17	Woody vegetation management within 50 feet of streams will be conducted by hand crews.			•	•	•	•
OM-20	OM-18	Herbaceous plants and low-growing shrubs will be left in place if they do not interfere with the safe O&M of Project lines and equipment as described in Table R-2 in Appendix R of the Plan of Development.			•	•	•	•
OM-21	OM-19	The Proponents will use existing stream crossings or new, permanent crossings that were approved as part of the Project, and will not create additional crossings without prior agency permitting and approval.			•	•	•	•
OM-22	OM-20	Only herbicides approved by the land managing agency as safe to use in aquatic environments and reviewed by the Proponents for effectiveness will be used within 100 feet of sensitive aquatic resources.			•	•		
OM-23	OM-21	Prior to the start of O&M activities, all supervisory personnel will be instructed on the protection of natural resources, including sensitive plant and wildlife species and habitats. If a contractor is used, the construction contract will address (a) the sensitive plant species that may be present in a particular area based on previous surveys and literature review; (b) the federal and state laws regarding protection of plants and wildlife; (c) the importance of these resources; (d) the purpose and necessity of protecting them; and (e) methods for protecting sensitive resources (e.g., Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and BLM wildlife policy).			•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OM-24	OM-22	Sensitive plant populations that occur within or near the ROW and work areas will be marked on the ground, where practical, to ensure that they are avoided. If species are discovered during the work, the Proponents will establish a spatial buffer zone, will contact the appropriate Agency within 24 hours, and will continue with the O&M activities outside of the established buffer unless otherwise directed. The Agency may evaluate the adequacy of the buffer on a case-by-case basis. Unless the Proponents are informed otherwise, work outside of the buffer area will continue. If the Proponents need to work within the buffer area, the Agencies and Proponents will work together to develop a solution that is acceptable to both parties and will allow for the Proponents to complete the work in a timely manner or within the scheduled outage window, if applicable. After the project is complete or no longer poses a threat to the plant population, the marking (stakes), if used, will be promptly removed to protect the site's significance and location from unwanted attention. As needed, marking will be reinstated during the land rehabilitation period.			•	•		
OM-25	OM-23	If sensitive wildlife species are discovered during O&M activities, and the animals are not directly within ground disturbance areas, they will be protected by marking the edges of the ROW and new access roads in the general vicinity to ensure that workers do not leave those areas. If the animals are within work areas that have, or will have, ground disturbance, the Proponents will establish an appropriate buffer zone and will contact the federal or state land manager immediately. The federal or state agency may evaluate the adequacy of the buffer on a case by case basis. Unless the Proponents are informed otherwise, work outside of the buffer area will continue. If the Proponents need to work within the buffer area, the Agencies and Proponents will work together to develop a solution that is acceptable to both parties and will allow for the Proponents to complete the work in a timely manner or within the scheduled outage window, if applicable. After the O&M activities are completed, or no longer pose a threat to the species, the marking (stakes) will promptly be removed to protect the site's significance and location from unwanted attention. As needed, marking will be reinstated during the land rehabilitation period.			•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
OM-28	OM-24	The Proponents will provide crews and contractors with maps showing avoidance areas; these maps will include work zones as well as ROW areas where overland travel will be avoided.			•	•	•	•
OM-29	OM-25	In the event any sensitive plants require relocation, permission will be obtained from the federal agency. If avoidance or relocation is not practical, the topsoil surrounding the plants will be salvaged, stored separately from subsoil, and respread during the restoration process.			•	•		
OM-30	OM-26	If sensitive wildlife species are killed or injured due to O&M activities, the appropriate federal agency will be notified.			•	•		
OM-31	OM-27	All on-site personnel will be made aware that all birds of prey are protected by federal and state laws.			•	•	•	•
VISUAL								
VR-1	VIS-1	The 500-kV transmission line lattice steel towers will be specified to have a dull galvanized finish. The proposed surface finish is a galvanized finish, treated after the initial galvanizing process to produce a dulled finish to reduce surface reflectivity. This process results in an installed tower with more visual absorption and thus allows the towers to blend in better with the landscape.	•			•	•	•
VR-2	VIS-2	The three subconductor (500-kV) and two subconductor (230-kV) that make up the conductor bundles would be specified to have a non–specular finish. Similar to the dulled finish of the transmission structures, the conductors reduce surface reflectivity. This process results in eliminating the shiny ribbon effect often seen in older untreated transmission lines and thus allows the conductors to blend in better with the landscape.	•			•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
VR-3	VIS-3	The proposed 230-kV transmission lines between Windstar and Aeolus would use a steel H-frame structure configuration similar to the existing 230-kV in the same general location. The steel pole H-frame would utilize self-weathering steel. Self-weathering steel is manufactured from a group of steel alloys that were developed to eliminate the need for painting. This type of steel alloy forms a stable rust-like appearance if exposed to the weather for several years. In areas where the 230-kV structures are skylined, dull galvanized steel will be considered to minimize visual impacts. Dulled galvanized steel has a galvanized finish, treated after the initial galvanizing process to produce a dulled finish to reduce surface reflectivity. This process results in an installed tower with more visual absorption and thus allows the towers to blend in better with the terrain, while at the same time preserving the corrosion resistant properties of the galvanized coating on the steel.	•			•	•	•
VIS-1	VIS-4	No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity except as required under the timber sale contracts.		•		•	•	•
VIS-2	VIS-5	To minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape, the alignment of any new access roads or cross-country routes will follow the landform contours where practicable, providing that such alignment does not impact resource values additionally or result in new impacts to resources that were previously avoided.	•	•		•	•	•
VIS-3	VIS-6	To minimize sensitive feature disturbance and/or visual contrast in designated areas on federal lands, structures will be placed so as to avoid sensitive features such as, but not limited to, riparian areas, water courses and cultural sites and/or to allow conductors to clearly span the features, within the limits of standard tower design. Where conflicts arise between resources, the applicable land manager will be consulted.	•	•		•		
VIS-4	VIS-7	To reduce visual impacts on federal land, including potential impacts on recreation values and safety, towers will be placed at the maximum feasible distance from the highway, canyon and trail crossings within limits of standard design and to the extent practical.	•	•		•		
VIS-5	VIS-8	Crossings of rivers shall be at approximately right angles where practical. Strategic placement of structures will be done both as a means to screen views of the transmission line and rights-of-way and to minimize the need for vegetative clearing.	•	•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
VIS-6	VIS-9	Insulators will be made of materials that have reduced potential to reflect and refract light. Glass insulators that are highly reflective will not be permitted in scenic areas on federally managed lands.	•	•		•		
VIS-7	VIS-10	For segments of the line 1) within the 0- to 0.5-mile zone of Interstate highways where existing lines of the same voltage are paralleled and 2) within the 0- to 0.5-mile zone of residences where existing lines of the same voltage are paralleled, new towers will be located adjacent to existing towers, within the limits of standard transmission line design and considering the ruling span length of adjacent proposed and existing lines.	•	•		•	•	•
VIS-8	VIS-11	Site-specific "micrositing," within the limits of standard engineering design, will be required near certain sensitive areas, as identified by the agencies, where proposed transmission facilities would impact visual quality; these situations include: • Crossings over major highways; • Crossings of high quality historic trails; • Crossings over the North Platte and Snake Rivers; • Sensitive travelways, use areas, residential areas, recreational facilities as identified by the agencies (including national recreation and scenic trails, campgrounds, recreation areas, and trailheads), and other areas identified by management plans; and • To avoid bisecting forest patches within the Sawtooth NF. The Proponents will consult with the applicable local land management agency during transmission line design.	•	•		•		
VIS-11	VIS-12	The lighting specified for the marshaling yards will be the minimum required to meet safety and security standards. All light fixtures within 1,000 feet of a residence will be hooded to eliminate any potential for glare and to prevent light from spilling off the site or up into the sky. Additionally, the fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
VIS-13	VIS-13	To reduce visual contrast in areas where overstory vegetation is removed for access, tower pads, or conductor clearance, specific sections of the right-of-way on federal land will have uneven edges (trees will be removed from the edge of the right-of-way out or away from the right-of-way boundary) to give a natural appearance, where not in conflict with regulatory requirements (e.g., NERC, WECC, and Occupational Safety and Health Administration requirements). This will be a onetime application and conducted with agency approval.	•	•	•	•		
VIS-15	VIS-14	To mitigate potential visual impacts on federal land, the construction and maintenance plan to be developed by the Proponents will include measures to reduce ROW scarring and enhance restoration. The plan will be approved by the land management agency prior to ground clearing and construction.	•		•	•		
Agency Required Mitigation Measure on Sawtooth NF								
NA	VIS-15	If Alternative 7K is selected, Natina stain (or an equivalent product) will be applied to towers (including lattice towers) placed on NFS lands within the Sawtooth NF to reduce visual effects at the middleground level.	•	•	•	Sawtooth NF		
CULTURAL								
CUL-1	CR-1	All work conducted in accordance with the Historic Properties Treatment Plan (HPTP) will be performed by qualified archeologists with trained assistants.		•		•	•	•
CUL-2	CR-2	An Unanticipated Discovery Plan will be included as part of the HPTP. This plan will specify what steps will be taken if a subsurface cultural resource is discovered during construction, including stopping construction in the vicinity of the find, notification of the appropriate land management agency, identification of a qualified archaeologist to conduct an evaluation of the find, and the development of an approved data recovery program or other mitigation measures.		•		•	•	•
CUL-3	CR-3	The Cultural Resource Monitoring and Mitigation Plan will include provisions for the preparation and curation of any collections from federal lands and for the preparation of a final report based on the data recovered for activities on federal lands.		•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
CUL-4	CR-4	Literature reviews and Class III surveys will be completed for cultural resources. A literature review will be conducted on public and private lands and will cover a study area of one-half mile on either side of the proposed and alternate transmission line alignments as well as areas identified for use as staging areas and access roads. Class III surveys covering the Area of Potential Effect (APE) as specified in the Programmatic Agreement will be completed. A Class II Sample Survey was conducted that consists of an intensive pedestrian survey of 15 percent of the length of all alternatives. One-mile-long by 500-foot-wide transect strips were surveyed along the proposed and alternative routes on federal lands only, for use in detailed analysis in the EIS. This also included a detailed preliminary assessment of effects on historic trails on all lands within the APE, including existing trail condition and a visual effects assessment.	•			•	•	•
CUL-5	CR-5	If construction will adversely affect any properties listed on, or eligible for listing on, the National Register of Historic Places (NRHP), mitigation will be required. Mitigation will be in accordance with the HPTP and may include, but not be limited to, one or more of the following measures: a) avoidance through the use of relocation of structures through the design process, realignment of the route, relocation of temporary workspace, or changes in the construction and/or operational design; b) the use of landscaping or other techniques that will minimize or eliminate effects on the historic setting or ambience of standing structures; and c) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures.		•		•	•	•
CUL-6	CR-6	Avoidance areas will be flagged or otherwise marked prior to construction activities. Flagging or other marking will be removed once construction is completed in an area.		•		•	•	•
CUL-7	CR-7	To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, all workers will attend mandatory training on the significance of cultural resources and the relevant federal regulations intended to protect them.		•		•	•	•
CUL-8	CR-8	If human remains are discovered, construction will be halted and the coroner will be notified and measures specified in the HPTP will be followed.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
CR-5	CR-9	On NFS lands, a management plan should be developed for each historic property nominated to the NRHP. The plan should be drafted during the nomination process. The National Heritage Strategy should be used to guide decisions on issues related to the Heritage Program.	•		•	•		
RECLAMATION								
REC-1	REC-1	Proponent personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.			•	•	•	•
REC-2	REC-2	Pre-construction weed treatment would be conducted prior to the start of ground-disturbing activities and at the time most appropriate for the target species.		•		•	•	•
REC-3	REC-3	Pre-construction weed treatment would be limited to the areas that are expected to have surface-disturbing activities. The final Reclamation Plan will include a schedule showing the phased in-service dates for different segments. Pre-construction weed treatment will be scheduled accordingly.		•		•	•	•
REC-4	REC-4	Pre-construction treatment may use mechanical control, hand spraying, grazing, or herbicides. The final Reclamation Plan will discuss those options, as applicable.		•		•	•	•
REC-5	REC-5	All herbicide applications would comply with label restrictions, federal, state and/or county regulation, the Proponents' specifications and landowner agreements. No spraying would occur prior to notification of the applicable land management agency. On federal or state controlled lands, a herbicide use plan will be submitted prior to any herbicide application as recommended in the BLM herbicide EIS (http://www.blm.gov/wo/st/en/prog/more/veg_eis.html). The herbicide use plan will include the dates and locations of application, target species, herbicide, adjuvants, and application rates and methods (e.g., spot spray vs. boom spray). No herbicide would be applied to any private property without written approval of the landowner. The final Reclamation Plan will contain a list of herbicides that may be used, target species, best time for application, application rates, and if they are approved for use on BLM-managed and NFS lands.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
REC-6	REC-6	Herbicides may be applied using a broadcast applicator mounted on a truck or all-terrain vehicle (ATV), backpack sprayers, or with hand sprayers as conditions dictate. Herbicide applications would be conducted only by licensed operators or under the supervision of a licensed operator. Where allowed, a broadcast applicator would likely be used. In areas where noxious weeds are more isolated and interspersed with desirable vegetation, noxious and invasive weeds would be targeted, thereby avoiding other plants. Pre-construction herbicide applications would not occur adjacent to known special status species or near water bodies.		•		•	•	•
REC-7	REC-7	All areas treated would be documented using GPS technologies and included in the annual report.			•	•	•	•
REC-8	REC-8	Areas of existing noxious weeds and invasive species will be avoided where possible.		•	•	•	•	•
REC-9	REC-9	Project vehicles will arrive at the job site clean of all soil and herbaceous material.		•	•	•	•	•
REC-10	REC-10	When the contractors demobilize from the job site where identified infestations of noxious weeds are present, they will use appropriate decontamination measures as defined in the final Reclamation Plan.		•	•	•	•	•
REC-11	REC-11	Soil stockpiles from areas that did not have noxious weeds or invasive species present, will not be placed adjacent to populations of noxious weeds or invasive species, where practicable.		•		•	•	•
REC-12	REC-12	Areas disturbed by Project activities are susceptible to the establishment and spread of noxious weeds. Erosion control measures identified in the SWPPP(s) would also assist in preventing the establishment of weeds on exposed soils.		•		•	•	•
REC-13	REC-13	Project-related storage and staging yards, fly yards, and other areas that are subject to regular long-term disturbance will be kept weed-free through regular site inspections and herbicide applications, subject to the consent of the land owner.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
REC-14	REC-14	Where pre-construction surveys have identified noxious or invasive weed species infestations, topsoil and other soils will be placed next to the infested area and clearly identified as coming from an infested area. Topsoil would be returned to the area it was taken from and will not be spread in adjacent areas. If the topsoil is not suitable for backfill, then it will be spread in another previously disturbed area and clearly identified for future weed treatments as applicable.		•		•	•	•
REC-15	REC-15	Straw or hay that may be used as a BMP to control erosion and sedimentation must be certified weed free. If certified weed-free materials are not available, then alternative BMPs will be used. The use of alternative BMPs will be coordinated with the construction storm water inspector.		•		•	•	•
REC-16	REC-16	The topsoil layer will be removed, taking care not to mix it with the underlying sub-soil. Where topsoil separation is employed, topsoil will be stored in a separate stockpile.		•		•	•	•
REC-17	REC-17	Certified weed-free straw, mulch, gravel, and other BMPs as appropriate, will be used as described in the SWPPP to stabilize the stockpile and limit erosion and standing water, control dust, and control the establishment of noxious or invasive weeds in stockpiled soils.		•		•	•	•
REC-18	REC-18	Topsoil and sub-surface soils will be replaced in the proper order during reclamation.						
REC-19	REC-19	Where it is necessary to spread soils (subsurface soils or waste rock resulting from excavations or foundation drilling), it will be done where practicable and in proximity to where the disturbance occurred (within the ROW). Material will be spread uniformly to match existing contours and covered with topsoil when available and reseeded.		•		•	•	•
REC-20	REC-20	Temporarily disturbed lands within the ROW will be re-contoured to blend with the surrounding landscape. Re-contouring will emphasize restoration of the existing drainage patterns and landform to pre-construction conditions, to the extent practicable. (Tower pads would not be recontoured.)		•		•	•	•
REC-21	REC-21	De-compaction: Areas within the ROW, laydown or staging yards, and other areas of extensive vehicle travel will typically contain compacted soils. These soils will be de-compacted on a case-by-case basis through negotiation with the landowner or land management agency.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
REC-22	REC-22	Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.		•		•	•	•
REC-23	REC-23	The Proponents will utilize soil amendments (e.g., fertilizer, wood or straw mulches, tackifying agents, or soil stabilizing emulsions) on a case-by-case basis and with landowner or land management agency approval. Specific soil amendments will be identified in the final Reclamation Plan and be consistent with the SWPPP.		•		•	•	•
REC-24	REC-24	Broadcast seeding will apply the seed directly on the ground surface. The type of broadcast spreader will depend on the size of the area to be seeded, and the terrain. Seed will be placed in direct contact with the soil, ideally at a depth of approximately 0.5 to 1-inch deep. It will then be covered by raking or dragging a chain or harrow over the seed bed; to remove air pockets.		•		•	•	•
REC-25	REC-25	Drill seeding would be used on areas of sufficient size with moderate or favorable terrain to accommodate mechanical equipment. Drill seeding provides the advantage of planting the seed at a uniform depth.		•		•	•	•
REC-26	REC-26	Hydroseeding, which is the spraying of seeds and water onto the ground surface, or hydroseeding/hydromulching, which is the spraying of seeds, mulch and water, may be implemented on steeper slopes. Tackifier may be added to facilitate adherence of hydromulch to slopes greater than 25 percent.		•		•	•	•
VEGETATION								
REC-2–17, 23–26	REC-2–17, 23–26	(Described under Reclamation)						
VEG-2	VEG-1	During construction, blading of native plant communities should be minimized, consistent with safe construction practices. Where feasible, shrubs should be cut at or near ground level to facilitate re-growth after construction. The footprint of construction and operations facilities should be kept to the minimum necessary.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

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VEG-3	VEG-2	Where feasible, locate new access roads to minimize the number of trees removed during construction. However, new access roads will not be relocated if the change would result in an increase in the overall disturbance (acres); require additional cut and fill activities, or impact other sensitive resources (e.g., sagebrush plant community, sensitive species habitat, and/or cultural resources or viewshed).	•			•		
VEG-4	VEG-3	In areas where revegetation would be completed, topsoil salvage and replacement should be used for all areas of cut or fill areas and for areas larger than 1 acre where soils would be disturbed during construction.			•	•	•	•
VEG-8	VEG-4	Prior to the start of construction and maintenance activities, all contractor vehicles and equipment (including personal protective equipment) will be cleaned of soil and debris capable of transporting invasive plant seeds or other propagules. All vehicles and equipment will be inspected by Agency-approved inspectors and certified as weed free by agency approved personnel, in order to ensure they have been cleaned properly. The final Reclamation and Noxious Weed Plans will include the location of all cleaning stations, how materials cleaned from vehicles at these stations will be either captured or treated so that cleaning station locations would not also become infected, and who would confirm/certify that vehicles leaving cleaning stations and/or entering construction sites are free of invasive plant materials.		•		•	•	•
VEG-9	VEG-5	The Agency-approved Environmental CIC will approve weed-free straw or other erosion control materials on federally managed lands prior to application.		•		•		
VEG-10	VEG-6	The Proponents will consult with the appropriate land management agency to determine tree seedlings to be planted in decommissioned roadbeds and other temporarily disturbed areas on federally managed lands (where trees were removed) to assure seedlings are matched to site conditions.			•	•		
VEG-11	VEG-7	The Proponents will notify the Forest Service when topsoil salvage operations are scheduled and seek assistance with field identification of top soil material.	•	•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
VEG-12	VEG-8	Annual post-construction monitoring and treatment of invasive plants on closed roads (access roads dedicated for use by Proponents only), temporary roads, fly yards, and other disturbed areas in the ROW shall continue for 3 years in areas where infestations or populations of noxious weeds have been identified. If after 3 years post-construction conditions are not equivalent to or better than pre-construction conditions (in accordance with applicable permit), monitoring and treatment will continue until these conditions are met. If adjacent land uses are contributing to the introduction and/or persistence of invasive plant species within areas disturbed by the project, then Proponents will not be required to treat noxious weeds for more than three years.			•	•		
VEG-13	VEG-9	The Proponents will meet the terms and stipulations within the timber sale contracts for timber removal operations on the Medicine Bow-Routt, Caribou-Targhee, and Sawtooth NFs.		•		•		
Agency Required Mitigation Measure on Federal Lands								
–	VEG-10	All timber and other vegetative resources to be sold or removed from federal lands will be appraised and sold at the appraised value.		•		Federal land only		
TES-PLANTS								
OM-23–24 and 28–29	OM-21–22 and 24–25	(Described under Operations and Maintenance.)						
PPC-1	TESPL-1	Blowout Penstemon – Surface disturbance will be allowed in suitable habitat where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impact to populations.		•		•		
PPC-2	TESPL-2	Colorado Butterfly Plant – Surface disturbance will be allowed in suitable habitat where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impact to populations.		•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TESPL-3	TESPL-3	Qualified botanists shall conduct preconstruction surveys during a season when target species are readily identifiable for special status or globally rare species. Where feasible, micrositing of project facilities shall avoid direct impacts to identified populations. Survey reports documenting the surveys, their results, and recommendations must be provided to land management agency for approval prior to construction. Agency botanists may evaluate individual sites based on site-specific conditions. Documentation of the evaluation of avoidance of impacts to sensitive and globally rare plants must be provided to the Agencies prior to construction.	•			•		
TESPL-4	TESPL-4	Slickspot Peppergrass – Environmental monitors will survey for and mark slickspots and aboveground populations of slickspot peppergrass within 50 feet of the construction area prior to ground disturbance (including roads) in potential or occupied slickspot peppergrass habitat. No construction shall occur within 50 feet of any slickspot peppergrass plants or slickspots found by the environmental monitor. Also, construction shall not occur within 50 feet of previously known occupied slickspot peppergrass areas, based on Idaho CDC data, even if aboveground plants are not observed by the environmental monitor. Within proposed critical habitat, impacts to Primary Constituent Elements, such as native sagebrush/forb vegetation, will be avoided to the extent practicable. Seeding during reclamation in areas of suitable habitat will use methods that minimize soil disturbance such as no-till drills or rangeland drills with depth bands. Reclamation will use certified weed-free native seed. Excess soils will not be stored or spread on slickspots.	•	•		•	•	•
TESPL-6	TESPL-5	Sand dune and cushion plant communities should be avoided, where feasible.	•	•		•		
TESPL-1	TESPL-6	Goose Creek Milkvetch – Surface disturbance will be allowed in suitable habitat for Goose Creek milkvetch where species-specific surveys have determined that no populations are present. The species-specific surveys will be conducted the year prior to construction, and the proposed disturbance areas will be redesigned to avoid direct impacts to populations.	•			•	•	

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TESPL-3	TESPL-7	Ute Ladies'-tresses – Qualified botanists shall conduct preconstruction surveys during a season when target species are readily identifiable for special status or globally rare species. Where feasible, micrositing of project facilities shall avoid direct impacts to identified populations. Survey reports documenting the surveys, their results, and recommendations must be provided to land management agency for approval prior to construction. Agency botanists may evaluate individual sites based on site-specific conditions. Documentation of the evaluation of avoidance of impacts to sensitive and globally rare plants must be provided to the Agencies prior to construction.	•			•	•	•
WEEDS								
REC-1–15	REC-2–15	(Described under Reclamation)						
OM-14, 16–17, 22	OM-13, 14–15, 20	(Described under Operations and Maintenance)						
WEED-1	WEED-1	The Proponents shall consult with each appropriate local land management agency (Forest Service and BLM) office to determine appropriate seed mix and commercial seed source for revegetation. The Reclamation, Revegetation, and Weed Management Plan shall specify the approved seed mixes for federal lands. Disturbed soil will not be allowed to support the growth of noxious weeds or invasive weedy species. Prevention of noxious weeds will apply to all phases of the Project.	•	•		•	•	
WEED-2	WEED-2	Weed control and prevention measures shall adhere to all agency standards and guidelines. These measures shall be developed in consultation with local, state, and federal weed agencies; all implemented measures would follow the principle of integrated weed management.		•		•	•	•
WEED-6	WEED-3	Soil stockpiles in areas containing noxious weeds and invasive plant species shall be kept separate from soil removed from areas that are free of noxious weed and invasive plant species, and the soil will be replaced in or near the original excavation. If requested by the applicable land-management agency, soil stockpiles shall be covered with plastic if the soil stockpile will be in place for two weeks or more and is not being actively used. On lands managed by the Forest Service or per private landowner request, stockpiles will not be covered with plastic.		•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
Agency Required Mitigation Measure on Federal Lands								
WEED-3	WEED-4	Gravel and other materials used for road construction on federally managed lands shall come from certified weed-free sources.		•		Federal land only		
WETLANDS								
REC-1–22	REC-1–22	(Described under Reclamation)						
SW-1, 4–5	WQA-1, 4–5	(Described under Water Quality)						
SW-6	WQA-6	(Described under Water Quality)						
SW-7–12	WQA-13–18	(Described under Water Quality)						
WET-1	WET-1	Impacts on wetland and riparian areas will be avoided unless physically or economically infeasible or where activities are permitted. Land management agencies' plans (RMPs, MFPs, and Forest Plans) that have standards, guidelines, stipulations, or avoidance buffers will be adhered to. Where these do not exist, Inland Fish Strategy (INFISH) buffers will be followed,	•			•		
WET-2	WET-2	Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project.	•			•	•	•
WET-3	WET-3	Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Proponents will obtain all necessary permits prior to discharging dredged or fill material to waters of the U.S. and state.	•			•	•	•
WET-4	WET-4	To meet USACE requirements for CWA 404 permitting, the Proponents will submit a mitigation plan that is accepted by the USACE. The framework for this plan is included in the Final EIS.	•			•	•	•
FISH								
OM-18	OM-16	(Described under Operation and Maintenance)						
BLA-2	BLA-2	(Described under Public Safety)						
FISH-1	FISH-1	On BLM-administered land, all culverts, whether temporary or permanent, must be designed to meet BLM Gold Book standards (Surface Operating Standards and Guidelines for Oil and Gas Exploration Development). On NFS lands, Forest Plan standards and guidelines shall apply.		•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
FISH-3	FISH-2	When taking water from TES fish-bearing streams for road and facility construction and maintenance activities, intake hoses shall be screened with the most appropriate mesh size (generally 3/32 of an inch), or as determined through coordination with NMFS and/or USFWS.		•	•	•	•	•
FISH-4	FISH-3	All wetlands and waters in the project area are assumed to contain aquatic invasive species and all equipment contacting water will be properly disinfected. After work is complete in a waterbody, any equipment involved in construction in that waterbody must be washed to remove any propagules of aquatic invasive species and to prevent the spread of those species to other waterbodies.		•		•	•	•
WILDLIFE								
WILD-1	WILD-1	Requests for exceptions from closure periods and areas will be submitted by the Proponents to the appropriate BLM Field Office in which the exception is requested through the Environmental CIC. Established exception processes on BLM-managed lands will be followed. The agency, the CIC, or a contractor chosen by the Proponents and approved by the agency will conduct any surveys and coordinate with any other agencies as necessary. Factors considered in granting the exception include animal conditions, climate and weather conditions, habitat conditions and availability, spatial considerations (e.g., travel routes and landscape connectivity), breeding activity levels, incubation or nestling stage, and timing, intensity, and duration of the Proposed action. Requests will be submitted in writing no more than 2 weeks prior to the proposed commencement of the construction period, to ensure that conditions during construction are consistent with those evaluated. The authorized officer, on a case-by-case basis, may grant exceptions to seasonal stipulations, and has the authority to cancel this exception at any time. A good faith effort will be made to act on exceptions within 5 business days of receiving a request to allow for orderly` construction mobilization. The CIC will conduct any required site visit and report the status to BLM for consideration of the decision to accept or deny the request. There is no exception process for NFS lands; all closure periods will be adhered to. Any proposed modifications to closure periods will be discussed on a case-by-case basis with the Forest Service.		•	•	•		
WILD-2	WILD-2	See TRANS-6 for vehicular speeds on all lands. Crew and vehicle travel will be restricted to designated routes while on federally designated big game winter range (except for areas within the ROW).		•	•	•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
WILD-3	WILD-3	The Project will be designed and constructed in compliance with Avian Power Line Interaction Committee (APLIC) standards (APLIC 2006, 2012) in order to reduce impacts to avian species. Any changes to the Project's design, as requested by federal, state, or local jurisdictions, as well as any changes considered by the Proponents, will also be in compliance with APLIC guidance.	•	•	•	•	•	•
WILD-4	WILD-4	Pre-construction pedestrian or aerial nest surveys will be conducted in suitable habitat during the appropriate nesting time periods needed to identify new raptor nest locations, and to establish the status of previously identified raptor nests. Appropriate buffers will be applied to active nests during construction. All encounters of nesting raptors in the Analysis Area will be reported to the biological monitor and to appropriate agencies.		•		•	•	•
WILD-5	WILD-5	Surveys will be conducted along the route across the Caribou-Targhee NF prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the Forest Service to determine appropriate protective measures.	•	•		•		
WILD-7	WILD-6	Guy wires will be marked with bird deterrent devices on federal lands to avoid avian collisions with structures, as directed by local land manager.	•		•	•		
WILD-8	WILD-7	Flight diverters will be installed and maintained where the transmission line crosses rivers at the locations identified in Table 3.10-4. Additional locations may be identified by the Agencies or the Project Proponents. The flight diverters will be installed as directed in the Proponents' approved Avian Protection Plans and in conformance with the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (Eagle Act) as recommended in the current collision manual of APLIC.	•		•	•	•	•
WILD-9	WILD-8	Pre-construction pedestrian or aerial surveys will be completed during appropriate nesting time periods, needed to identify each raptor species. The Proponents will provide survey results to the authorized officer for approval. (See WILD-1)		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
WILD-10	WILD-9	To the extent feasible, all vegetation clearing will be conducted to avoid the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements) in order to minimize impacts to migratory birds. Where this is not feasible, pre-construction surveys within the disturbance footprint shall be conducted within seven days prior to clearing. If an active nest (containing eggs or young) of a bird species protected under the MBTA is found during either pre-construction surveys or construction activities, the nest will be identified to species, inconspicuously marked, and left in place until any young have fledged before the vegetation is removed.		•		•	•	•
WILD-11	WILD-10	Snags will be maintained to the extent practical and where it does not conflict with the Proponents vegetation management specifications along the outer portions of the Project's ROW in order to reduce the impacts to habitat for cavity nesters.		•		•		
WILD-12	WILD-11	Any areas that may require blasting will be identified and a blasting plan will be submitted to the appropriate agency for approval. Blasting within 0.25 mile of a known sensitive wildlife resource will require review and approval by the appropriate agency.		•		•		
Agency Required Mitigation Measure on Federal Lands								
WILD-6	WILD-12	The Proponents will annually document the presence and location of large stick nests on any towers constructed as a result of this Project. Nests will be categorized to species or species group (raptors or ravens), to the extent possible. This would begin following the first year of construction through year 10 of operations. Results would be provided annually to the applicable land-management agency and to the USFWS.			•	Federal land only		
TES-WILDLIFE								
TESWL- 3	TESWL-1	H-frame structures will be equipped with anti-perch devices to reduce raven and raptor use, and limit predation opportunities on special status prey species on federally managed lands.	•	•	•	•		
TESWL-4	TESWL-2	In the event that an ESA-listed species not covered by the Biological Opinion (BO) is discovered during surveys, construction will cease, the USFWS will be notified, and Section 7 consultation will be initiated. In addition, the transmission line or structures will be relocated to minimize direct impacts to newly discovered ESA species, to the extent practical.		•	•	•	•	•
TESWL-5	TESWL-3	Black-footed Ferret – Pre-construction surveys will be conducted for the black-tailed prairie dog (in addition to those already proposed for the white-tailed prairie dog) in Segment 1W.[1/]	•	•	•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TESWL-8	TESWL-4	The Environmental CIC, an agency biologist, or agency designee will accompany the Construction Contractor site engineers during the final engineering design or prior to ground-disturbing activities to verify and flag the location of any known occupied structures (e.g., nests, burrows, colonies) utilized by sensitive species. This will include, but not be limited to, artificial burrows that have been constructed as part of research/restoration efforts, prairie dog colonies, and raptor nests, which could be impacted by the Project based on the indicative engineering design. The final engineering design will be “microsited” (routed) to avoid direct impact to these occupied structures to the extent practical within engineering standards and constraints.	•			•		
TESWL-10	TESWL-5	Grouse Species – Proponents will provide the Agencies a list of the protocols that the Proponents will use during greater sage-grouse and sharp-tailed grouse pre-construction surveys. The Agencies will either approve these protocols, or suggest alternative protocols to be used.	•	•	•	•		
TESWL-11	TESWL-6	Sharp-tailed Grouse – In areas where sharp-tailed grouse leks occur in proximity to greater sage-grouse leks, surface disturbance will be avoided within 4 miles of occupied or undetermined greater sage-grouse leks from March 1 to July 15. In areas where sharp-tailed grouse leks occur in isolation from greater sage-grouse leks, surface disturbance will be avoided within 1.2 miles of occupied or undetermined sharp-tailed grouse leks from March 15 to July 15.	•	•	•	•		
TESWL-13	TESWL-7	Yellow-billed cuckoo - A pre-construction survey for the yellow-billed cuckoo will be conducted at any proposed crossing of suitable habitat. If these birds are detected within 1 mile of the centerline (within existing habitat), construction will not occur until the young have fledged or the nest is abandoned. The crossing-specific plan will contain proposed monitoring measures to assure compliance with this measure.	•	•	•	•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TESWL-14	TESWL-8	Sage-Grouse – On federal lands, there will be no surface occupancy (NSO) within 0.6 mile of the perimeter (or centroid if the perimeter has not been mapped) of occupied greater sage-grouse leks located within Core areas in Wyoming, and NSO within 0.25 mile in non-Core areas (as required by BLM IM WY-2012-19 and BLM land management plans). "No surface occupancy," as used here, means no new surface facilities, including roads, will be placed within the NSO area. Other activities (i.e., non-surface occupancy) may be authorized, with the application of appropriate seasonal stipulations, provided the resource's protected area is not adversely affected.		•	•	•		
TESWL-15	TESWL-9	Sage-Grouse – On federal lands, surface disturbance will be avoided within 4 miles of occupied or undetermined greater sage-grouse leks from March 1 to July 15. This distance (i.e., 4 miles) may be reduced on a case-by-case basis by the applicable agency, if site-specific conditions would allow the Project to be located closer to the lek than 4 miles (e.g., topography prevents the Project from being visible from the lek, or a major disturbance such as a freeway or existing transmission line is located between the Project and the lek).		•	•	•		
TESWL-19	TESWL-10	Sage-Grouse – If Winter Concentration Areas for the greater sage-grouse are designated, there will be no surface disturbances within the designated areas from November 1 through March 15.		•	•	•		
TESWL-22	TESWL-11	Sage-Grouse – No structures that require guy wires will be used in occupied sagebrush obligate habitats within the area managed under the Kemmerer RMP.		•	•	•		
TESWL-17	TESWL-12	Colorado River T&E Fishes – A payment of a one-time fee, based on a fee schedule provided by the USFWS, will be made based on the amount of water used during construction of any segments that cross the Colorado River system.		•		•	•	•
TESWL-18	TESWL-13	Midget faded rattlesnake – Preconstruction surveys for occupied or potential midget faded rattlesnake hibernacula (i.e., rock outcrops with south to east aspect) will be conducted. The Proponents shall prepare a plan identifying measures to reduce impacts to midget faded rattlesnake if they are discovered. This plan shall require approval by BLM and the WGFD prior to its implementation	•	•	•	•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
Agency Required Mitigation Measures on Federal Lands								
TESWL-1	TESWL-14	For the protection of aquatic and riparian/wetland dependent species, surface disturbing and disruptive activities will be avoided in the following areas: 1) identified 100-year floodplains; 2) areas within 500 feet of perennial waters, springs, wells, and wetlands; and 3) areas within 100 feet of the inner gorge of ephemeral channels on federally managed lands. Where it is not possible to avoid wetland and riparian habitat, crossing-specific plans will be developed. These plans will: 1) demonstrate that vegetation removal is minimized; 2) show how sediment would be controlled during construction and operation within wetland and riparian areas; 3) attempt to intersect the wetland or riparian habitat at its edge; and 4) provide measures to restore habitat and ensure conservation of riparian microclimates. This plan will be submitted to the appropriate land management agency and approved prior to construction of any portion of the Project within sensitive riparian habitat.	•	•	•	Federal land only		
TESWL-2	TESWL-15	Anti-perch devices will be required on power poles located within one-quarter mile of prairie dog towns within the BLM's Rawlins Field Office.		•		Federal land only		
TESWL-23	TESWL-16	Sage-Grouse – If the Kemmerer RMP is amended to allow Proposed Route 4 or Alternatives 4C or 4E to be selected, existing fences within 1 mile of the portion of the Gateway West Project located on lands managed by the Kemmerer RMP will be modified with FireFly Grouse Flight diverters (or a similar product) in order to prevent greater sage-grouse mortalities. Additional site-specific reclamation, such as transplanting sagebrush seedlings within previous disturbed habitats, will also be required to off-set the net loss of sagebrush habitats within the Rock Creek/Tunp management area.		•	•	Federal land only		
PALEONTOLOGICAL RESOURCES								
CUL-9	PALEO-1	If significant fossil materials are discovered during Project construction, all surface-disturbing activities in the vicinity of the find will cease until notification to proceed is given by the authorized officer. The site will be protected to reduce the risk of damage to fossils and context. Appropriate measures to mitigate adverse effects to significant paleontological resources will be determined by the authorized officer.		•	•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
PALEO-1	PALEO-2	Paleontological resources (as defined by omnibus Public Land Management Act – Paleontological Resources Preservation Section) on federally managed land shall be managed and protected using scientific principles and expertise. Appropriate plans for inventory, monitoring, and the scientific and educational use of these resources shall be developed in accordance with applicable agency laws, regulations and policies.	•	•	•	•		
PALEO-2	PALEO-3	Where fossil-bearing sediments are exposed by construction, the sediments must be covered with a 4-inch layer of soil where feasible to reduce unauthorized removal or disturbance of resources.		•	•	•	•	•
Agency Required Mitigation Measure on Federal Lands								
–	PALEO-4	To ensure compliance with the Paleontological Resources Preservation Section of the Public Land Management Act, the Proponents' Paleontological Mitigation Plan for the Project (see PALEO-2) shall specify that: • Monitoring of excavation and grading in sensitive sediments, especially access roads and tower sites, must occur when construction is near or in those geologic formations. • Monitoring of excavations in sensitive sediments, screening the excavated spoils, and processing of bulk sediment samples for microinvertebrate fossils must occur where there is a significant potential for data recovery from those spoils. • Monitoring must be performed by a qualified paleontologist and in consultation with a designated paleontologist in each state, NF, or BLM district. The Authorized Officer will designate the appropriate paleontologist depending on project location.	•	•	•	Federal land only		
–	PALEO-5	Field surveys will be completed prior to surface disturbance in areas with potential fossil yields of Class 3, 4, or 5, in accordance with criteria stated in the Paleontological Protection Plan and as required by the land-management agency.	•	•	•	Federal land only		
GEOLOGIC HAZARDS								
BLA-1, 2	BLA-1, 2	(See description under Public Safety)						
GEO-2	GEO-1	Review the final location of the preferred alternative with affected mine operators and lessees to ensure all measures are taken to protect against subsidence.	•			•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
GEO-4	GEO-2	A site-specific soil analysis shall be conducted prior to construction to verify any areas identified as unstable or marginally unstable on federal lands. A site-specific geotechnical analysis shall be conducted of federal lands prior to construction to locate areas where there is landslide risk. If such areas are identified, the Proponents will develop mitigation and submit a report to the appropriate land management agency.	•		•	•		
SOILS								
SW-1, 4, 5, 7–13	WQA-1–13	[See description under Water Quality]						
SPC-1-5	WQA-13–17	[See description under Water Quality]						
SOIL-1	SOIL-1	The Wyoming BLM State Reclamation Policy and applicable Agency management plan requirements for soil management will be followed on federal lands in the state of Wyoming.		•	•	•	•	•
SOIL-2	SOIL-2	The Proponents will submit a Compaction Monitoring Plan for review and Agency approval prior to construction that specifies the conditions under which construction will either not start or will be shut down due to excessively wet soils. Conditions will be measurable in the field and easy to demonstrate to construction workers.	•			•	•	•
SOIL-3	SOIL-3	During decommissioning, some obviously compacted areas, such as established newly constructed access roads, will require loosening prior to revegetation. If necessary to re-establish vegetation, the Proponents will use a ripper blade, till, or similar instrument to loosen the surface soil layer.			•	•	•	•
SOIL-6	SOIL-4	Detrimental soil disturbance such as compaction, erosion, puddling, and displacement will be minimized through implementing measures identified in the SWPPP. Measures may include road ripping, frequent waterbars, cross-ditching (e.g., rolling dips) or other methods to reduce compaction while preventing gully formation. Ripping pattern should be altered to a crossing, diagonal, or undulating pattern of tine paths to avoid concentrated runoff patterns that can lead to gullies.	•	•	•	•	•	•
SOIL-7	SOIL-5	The Proponents are responsible for monitoring to ensure soil protection is achieved, and providing a monitoring report on reseeding success and/or other methods to stabilize soils to the Forest Service by the end of each growing season for areas on NFS lands for 3 years or until requirements are met for the applicable permit.		•	•	•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
SOIL-8	SOIL-6	Reclamation of all temporary disturbances on NFS lands (such as road cuts) should include replacement of material to original contours and re-compaction to pre-disturbance compaction percentage (which should be identified during reclamation at adjacent locations to the disturbance). Guidelines for streambank re-compaction to maximize vegetative regrowth and mechanical stability are covered in USACE publication ERDC TN-EMRRP-SR-26 (Goldsmith et al. 2001).		•	•	•		
SOIL-10	SOIL-7	In order to meet Forest Plan Soil Standards on NFS lands, the Reclamation and Revegetation Plan (approved by the Forest Service) will describe on-site restoration using topsoil salvaging.	•	•	•	•		
WATER QUALITY								
SW-1	WQA-1	The appropriate NPDES permits for construction activities that disturb one acre or more of land will be obtained from the Department of Environmental Quality and USEPA or their designees.		•	•	•	•	•
SW-2	WQA-2	NPDES permit requirements will be met. This includes implementing and maintaining appropriate BMPs for minimizing impacts to surface water.		•	•	•	•	•
SW-3	WQA-3	One or more responsible persons will be designated to manage stormwater issues, conduct the required stormwater inspections, and maintain the appropriate records to document compliance with the terms of the NPDES permit.		•	•	•	•	•
SW-4	WQA-4	The SWPPPs will be modified as necessary to account for changing construction conditions.		•	•	•	•	•
SW-5	WQA-5	The SWPPPs will identify areas with critical erosion conditions that may require special construction activities or additional BMPs to minimize soil erosion.		•	•	•	•	•
SW-7	WQA-6	Stormwater BMPs will be maintained on all disturbed lands during construction activities, as described in the SWPPP.		•	•	•	•	•
SW-8	WQA-7	Approved sediment and erosion control BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.		•	•	•	•	•
SW-9	WQA-8	Temporary BMPs will be used to control erosion and sediment at staging areas (equipment storage yards, fly yards, lay down areas) and substations.		•	•	•	•	•
SW-10	WQA-9	The construction schedule may be modified to minimize construction activities in rain-soaked or muddy conditions.		•	•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
SW-11	WQA-10	Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.		•	•	•	•	•
SW-12	WQA-11	Upon completion of construction, permanent erosion and sediment BMPs will be installed along the transmission line within the ROW, at substations, and at related facilities in accordance with the SWPPPs.		•	•	•	•	•
SW-13	WQA-12	In areas of droughty soils, the soil surfaces will be mulched and stabilized to minimize wind erosion and to conserve soil moisture in accordance with the SWPPPs.		•		•	•	•
SPC-1	WQA-13	Construction industry standard practices and BMPs will be used for spill prevention and containment.		•		•	•	•
SPC-2	WQA-14	Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.		•		•	•	•
SPC-3	WQA-15	All staging areas will contain fueling areas with containment. Where fueling must be conducted along the ROW, the plan will specify BMPs.		•		•	•	•
SPC-4	WQA-16	If an upland spill occurs during construction, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated materials will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.		•		•	•	•
SPC-5	WQA-17	If a spill occurs which is beyond the capability of on-site equipment and personnel, an Emergency Response Contractor will be identified and available to further contain and clean up the spill.		•		•	•	•
SPC-6	WQA-18	For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate by the contractor to recover and contain released materials on the surface of the water.		•		•	•	•
SPC-7	WQA-19	If pre-existing contamination is encountered during operations, work will be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party; and local, state, and federal regulations will determine the appropriate cleanup method(s) for these areas.		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
SPC-8	WQA-20	The SPCC Plan will include details on the types and quantities of absorbent and protective materials (e.g., visqueen, booms) that must be readily available to construction personnel and requirements for the restocking of materials.		•		•	•	•
SPC-9	WQA-21	Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas at least 500 feet away from streams, 400 feet for public wells, and 200 feet from private wells.		•		•	•	•
SPC-10	WQA-22	Pumps and temporary fuel tanks for the pumps will be stored in secondary containment. Containment will provide a minimum volume equal to 110 percent of the volume of the largest storage vessel located in the yard.		•		•	•	•
WQA-1	WQA-23	Avoid placement of road bed material in channels (perennial, intermittent or ephemeral). Road bed material contains considerable fines that would create sedimentation in coarse cobble dominated stream channels. Even in seasonally dry reaches those fines could be transported during flow periods and negatively impact fish spawning reaches below.	•	•	•	•	•	•
WQA-2	WQA-24	On federal lands, consult with appropriate land management agency staff prior to siting and design for stream crossings (location, alignment, and approach for culvert, drive-through, and ford crossings). This may include a hydrologist, engineer and, for perennial and many intermittent streams, an aquatic biologist.	•			•		
WQA-3	WQA-25	All culverts on NFS lands, both permanent and temporary, shall be designed and installed to meet desired conditions for riparian and aquatic species as identified in the applicable Forest Plan. Culverts should not be hydraulically controlled. Hydraulically controlled culverts create passage problems for aquatic organisms. Culvert slope should not exceed stream gradient and should be designed and implemented (typically by partial burial in the streambed) to maintain streambed material in the culvert.	•	•	•	•		
WQA-4	WQA-26	Culvert sizing on NFS lands should also comply with Guidance for Aquatic Species Passage Design, Forest Service Northern Region & Intermountain Region (Forest Service 2003f).	•	•	•	•		
WQA-5	WQA-27	On non-federal lands, culvert placement should comply with state BMPs.		•	•		•	•
SW-6	WQA-28	Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.				•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TR-3	WQA-29	If the Project proposes to obtain water from wells or surface water sources to suppress dust, written approval from the landowner or regulatory agency will be obtained prior to appropriation.		•				•
LAND USE								
TR-7	TR-5	(See description under Transportation)						
LU-1	LU-1	Signs shall be posted at access points to access roads where public access is restricted by a land use plan, and on private, state, and Tribal lands at the request of the landowner, agency, or Tribal government. Signs shall indicate the restriction or regulation, location, penalty for violation, and appropriate contact information for reporting violations. Signage shall be maintained and replaced as part of the routine maintenance.			•	•	•	•
AGRICULTURE								
AGRI-18	AGRI-1	Consult with the Farm Service Agency and landowners to determine how construction may affect the CRP status of the land currently enrolled in CRP.	•					•
TRANSPORTATION								
TR-1	TRANS-1	A Traffic and Transportation Management Plan will be developed and implemented to provide site-specific details showing how the Project will comply with the EPMs listed in this attachment. This plan will be submitted to and approved by the appropriate federal, state, and local agencies with authority to regulate use of public roads, and approved, prior to the issuance of a Notice to Proceed with construction.	•			•	•	•
TR-4	TRANS-2	If a construction method requires the closure of a state- or county-maintained road for more than 1 hour, a plan will be developed to accommodate traffic as required by a county or state permit.	•	•			•	•
TR-5	TRANS-3	On county- and state-maintained roads, caution signs will be posted on roads, where appropriate, to alert motorists of construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction to ensure safety and to minimize traffic congestion.	•	•			•	•
TR-6	TRANS-4	To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for employee personal vehicles.	•	•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
TR-7	TRANS-5	Unauthorized vehicles will not be allowed within the construction ROW or along roadsides near the ROW.		•		•	•	•
TR-8	TRANS-6	Construction vehicles will follow a 25 mph speed limit on unposted project roads.		•		•	•	•
TR-10	TRANS-7	Landowners will be notified at least 48 hours prior to the start of construction within 0.25 mile of a residence.		•		•	•	•
TR-11	TRANS-8	Emergency vehicle access to private property will be maintained.		•				•
TR-12	TRANS-9	Roads in residential areas will be restored as soon as possible, and construction areas near residences will be fenced off at the end of the construction day.		•				•
TR-13	TRANS-10	Roads negatively affected by construction and as identified by the agencies will be returned to pre-construction condition.		•		•	•	•
TR-14	TRANS-11	Roads developed specifically for this project that are identified by the Proponents as no longer necessary will be reclaimed as specified in the Final Reclamation Plan. Culverts will be removed.		•		•	•	•
TRANS-1	TRANS-12	The Proponents will attempt to identify existing two-track trails as preferred access roads for construction.	•	•		•	•	•
TRANS-2	TRANS-13	Roads will be designed so proper drainage is not impaired and roads will be built to minimize soil erosion. Consult with appropriate Agencies during design stage.	•	•	•	•	•	•
TRANS-3	TRANS-14	Access roads built for the Project on federal lands shall be closed to the public unless otherwise agreed upon with the land management agency. Signs shall indicate the restriction or regulation, location, penalty for violation, and appropriate contact information for reporting violations. Signage and road closure measures shall be evaluated during routine visits and maintained or replaced as necessary as part of routine maintenance. Access roads constructed solely for use by the Proponents will be maintained by the Proponents as needed for Proponents use in accordance with the ROW grant/special use permits.	•	•	•	•		
TRANS-4	TRANS-15	Roads to be abandoned may be left intact through mutual agreement of the land management agency, landowner, the tenant, and the Proponents, unless located in flood areas or drainage hazard areas or otherwise restricted by federal, state, or local regulations.	•	•	•	•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
AIR QUALITY								
AIR-1	AIR-1	Minimize idling time for diesel equipment whenever possible.		•		•	•	•
AIR-2	AIR-2	Ensure that diesel-powered construction equipment is properly tuned and maintained, and shut off when not in direct use.		•		•	•	•
AIR-3	AIR-3	Prohibit engine tampering to increase horsepower.		•		•	•	•
AIR-4	AIR-4	Reduce construction-related trips as feasible for workers and equipment, including trucks.		•		•	•	•
TR-2	AIR-5	Dust suppression techniques will be applied, such as watering construction areas or removing dirt tracked onto a paved road as necessary to prevent safety hazards or nuisances on access roads and in construction zones near residential and commercial areas and along major highways and interstates.		•		•	•	•
ELECTRICAL ENVIRONMENT								
–	EE-1	During final design, limit the conductor surface gradient in order to meet the IEEE Radio Noise Guideline.		•	•		•	•
–	EE-2	During construction, identify objects such as fences, metal buildings, pipelines, and other metal objects within or near the proposed ROW that have the possibility for induced potentials and currents and implement electrical grounding of these objects according to the utility's and National Electric Code standards.			•	•	•	•
–	EE-3	During final design and construction, identify areas where large equipment is anticipated and provide sufficient conductor clearance to ground to meet the NESC 5 mA rule or limit size or access of large equipment.		•	•		•	•
PUBLIC SAFETY (Blasting, Fire, Contamination)								
BLA-1	BLA-1	The Blasting Plan will identify blasting procedures including safety, use, storage, and transportation of explosives that will be employed where blasting is needed, and will specify the locations of needed blasting.		•		•	•	•
BLA-2	BLA-2	All blasting will be performed by registered licensed blasters who will be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives, and blast vibration limits for nearby structures, utilities, wildlife, and fish (where blasting is conducted in waterbodies).		•		•	•	•

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
–	BLA-3	Appropriate flags, barricades, and warning signals will be used to ensure safety during blasting operations. Blast mats will be used when needed to prevent damage and injury from fly rock.		•		•	•	•
–	BLA-4	Blasting in the vicinity of pipelines will be coordinated with the pipeline operator, and will follow operator-specific procedures, as necessary.		•		•	•	•
–	BLA-5	Damages that result from blasting will be repaired or the owner fairly compensated.		•		•	•	•
FIRE-1	FIRE-1	Train all personnel about the measures to take in the event of a fire including fire dangers, locations of extinguishers and equipment, and individual responsibilities for fire prevention and suppression.		•	•	•	•	•
FIRE-2	FIRE-2	Equip all construction equipment operating with internal combustion engines with spark arresters.		•	•	•	•	•
FIRE-3	FIRE-3	Restrict motorized equipment, including worker transportation vehicles, to the designated and approved work limits.		•	•	•	•	•
FIRE-5	FIRE-4	Require all motor vehicles and equipment to carry, and individuals using handheld power equipment to have, specified fire prevention equipment.		•	•	•	•	•
FIRE-6	FIRE-5	Provide a list of equipment capable of being adapted to fighting fires to local fire protection agencies.		•	•	•	•	•
FIRE-7	FIRE-6	Notify the appropriate fire suppression agencies of scheduled road closures.		•	•	•	•	•
FIRE-8	FIRE-7	Prohibit burning of slash, brush, stumps, trash, explosives storage boxes, or other Project-generated debris unless authorized by the applicable land management agency.		•	•	•	•	•
FIRE-9	FIRE-8	Designate a Fire Guard on each construction crew prior to the start of construction activities each day and provide a communications system for maintaining contact with fire control agencies.		•	•	•	•	•
FIRE-10	FIRE-9	The Proponents shall comply with fire restrictions and/or waivers as applicable.		•	•	•	•	•
ENV-2	CON-1	All construction staff will be trained on the types of contamination that could be encountered and how to respond if contamination is encountered.		•		•		

Table 2.7-1. Proposed Environmental Protection Measures (continued)

Draft EIS Number	New EPM Number for Final EIS Submittal	Environmental Protection Measures	Application Phase			Applicable to Land Ownership[1/]		
			Design and Engineering	Construction	Operations and Maintenance	Federal Land and all land in Wyoming and Idaho Segments 6, 8 and 9	State Land in Idaho	Private Land in Idaho Segments 4, 5, 7, and 10
NOISE								
NOISE-2	NOISE-1	Identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance.		•	•	•	•	•
NOISE-3	NOISE-2	Establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers.		•		•	•	•
NOISE-4	NOISE-3	Implement and maintain a noise complaint review process to deal with residents' or other potential queries and complaints as they arise. Such complaints would be logged and investigated on an individual basis to facilitate resolution of the issue of concern.		•		•	•	•

1/ TESWL-3 has been offered by the Proponents in Appendix Z of the Plan of Development; however, although the Proponents are encouraged to protect all prairie dog towns, formal black-footed ferret surveys within those towns will no longer be required by the BLM (USFWS 2013a).

2.8 SUMMARY COMPARISON OF EFFECTS OF ALTERNATIVES

Sections 2.8.1 through 2.8.7 are a summary by segment of the environmental effects of the Preferred Route, Proposed Route, and Route Alternatives, based on the evaluation criteria identified within each resource analysis section. In some cases, the impact assessment is based on assessment methodologies that provide adequate disclosure for NEPA analysis but will require more detailed analysis to meet the requests of other laws such as Section 106 of the NHPA or Section 404 of the CWA. Segments 1W(c), 3, 6, and 10 are not discussed in this section because no feasible alternatives were identified for these routes. A full explanation of the evaluation criteria and the environmental consequences of choosing each alternative is found by resource in Chapter 3. Tables in Sections 2.8.1 through 2.8.7 present the Preferred Route, Proposed Route, the Route Alternatives, and their comparison portions. All impact analysis was conducted based on a Project description that includes the Proponents' EPMs contained in Appendix B. The Proponents incorporated most of the Agency mitigation measures included in the Draft EIS into their EPMs for the Final EIS; however, some residual impacts identified after implementation of the EPMs remain. These were further mitigated where appropriate with resource-specific measures identified in Chapter 3. EPMs would apply to all Action Alternatives as identified in Table 2.7-1. Additional mitigation measures identified by the Agencies would apply to all alternatives; however, they would only apply to federal land.

2.8.1 Alternative 1W(a)-B Compared to the Preferred/Proposed Route

Segment 1W(a) of the Preferred/Proposed Route was developed to follow an existing utility corridor for most of its length. Among the key factors considered in routing this segment were wildlife resources (sage-grouse, big game winter range, and raptors), cultural resources, historic trails, land use, and wetlands. Table 2.8-1 compares resource characteristics between the Proposed Route and its Route Alternative. Figure A-2 in Appendix A shows the Preferred/Proposed Route and Route Alternative.

Alternative 1W(a)-B was the original Proposed Route. The Proposed Route for 1W(a) was revised based on comments on the Draft EIS from the City of Glenrock and local residents. The Proponents requested retention of the original route as an alternative. The revised Proposed Route for this segment parallels an existing transmission line. Alternative 1W(a)-B would not parallel an existing transmission line corridor, and does not cross BLM-managed lands or NFS lands. Alternative 1W(a)-B would be longer than the comparison portion of the Proposed Route (20.9 miles vs. 16.5) and permanently disturb a larger area (44 acres vs. 27 acres) and, therefore, would result in greater overall disturbance, especially to private parcels in and near Glenrock. It would result in up to three transmission lines on some private parcels. Alternative 1W(a)-B would not be consistent with the state's Sage-Grouse Core Area strategy identified in the Wyoming Governor's EO 2011-5. Alternative 1W(a)-B would permanently impact twice the amount of sage-grouse habitat as compared to the Proposed Route (22 acres vs. 11). This alternative would impact less than one acre of wetlands and riparian areas whereas the comparison portion of the Proposed Route would cross 3.0 acres. Alternative 1W(a)-B would potentially affect slightly more cultural resource sites (36 vs. 34) than the comparison portion of the Proposed Route.

Table 2.8-1. Alternative 1W(a)-B Compared to the Preferred/Proposed Route

Comparison Features	Unit	Preferred/Proposed Segment 1W(a) Total Length	Preferred/Proposed Comparison Portion for Alternative 1W(a)-B	Alternative 1W(a)-B
General				
Total Length	miles[1/]	73.8	16.5	20.9
Construction Disturbance Area	acres[2/]	777	148	271
Operations Disturbance Area	acres	177	27	44
Land Ownership and Use				
BLM	miles	27.0	–	–
Forest Service	miles	2.3	–	–
Other Federal	miles	–	–	–
State	miles	17.5	7.0	10.9
Private	miles	27.0	9.5	10.0
Indian Reservation	miles	–	–	–
WWE Corridor[3/]	miles	17	–	–
Within or Adjacent to Existing Transmission Corridor	miles	67.9	14.9	5.5
Resource Summaries				
Visual				
Forest Service Modification VQO Crossed	miles	2.3	–	–
VRM I or II crossed	miles	0.6	–	–
Cultural				
Potentially affected prehistoric cultural resources	number	18	18	8
Potentially affected historic cultural resources[4/]	number	16	16	28
Wildlife				
Designated big game winter range affected (operations)	acres	110	27	42
Raptor nests within 1 mile	number	34	8	2
Sage-grouse habitat affected(operations)	acres	124	11	22
Vegetation				
Forest and woodland vegetation removed (construction)	acres	59	2	2

Table 2.8-1. Alternative 1W(a)-B Compared to the Preferred/Proposed Route (continued)

Comparison Features	Unit	Preferred/Proposed Segment 1W(a) Total Length	Preferred/Proposed Comparison Portion for Alternative 1W(a)-B	Alternative 1W(a)-B
Wetland/riparian disturbance (construction)	acres	10.5	3.0	0.2
Water/Fish				
Waterbody crossings	number	230	31	23
Temperature- or sediment-impaired stream crossings	number	–	–	–
Soils/Minerals				
Highly erodible soils impacted (High K factor, construction)	acres	237	24	5
Mineral area (construction)	acres	59	7	34
Land Use/Recreation				
BLM or FS Plan Amendment would be required	Yes/No	Yes	No	No
Residences within 300 feet of the centerline	number	2	1	1
Residences within 1,000 feet of the centerline	number	6	4	7
Agriculture				
Dryland farming impacted (operations)	acres	–	–	–
Irrigated agriculture impacted (operations)	acres	–	–	–

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy, a utility corridor generally 3,000 feet wide
4/ Includes trails.

2.8.2 Alternatives 2A and 2B Compared to the Preferred/Proposed Route

Segment 2 of the Preferred/Proposed Route was developed to follow the WWE corridor and existing BLM-designated ROW corridor where feasible. The route was revised to incorporate Alternative 2C (included in the Draft EIS) in order to be consistent with the state's sage-grouse corridor. Among the key factors considered in routing this segment were visual resources visible from the Fort Fred Steele State Historic Site and nearby residences, sage-grouse and big game winter range, mining leases, and SRMAs. The current Preferred/Proposed Route would have the least impact on the Fort Fred Steele State Historic Site and residences among the Route Alternatives. Table 2.8-2 compares effects to key resources under each Route Alternative. Figure A-3 in Appendix A shows the Proposed Route and Route Alternatives.

Alternative 2A was developed to maximize the use of the WWE corridor and existing BLM-designated ROW corridor. This alternative is similar in length to the comparison portion of the Preferred/Proposed Route; however, visual impacts to visitors to the Fort Fred Steele State Historic Site would be greater compared to the other alternative and the comparison portion. Alternative 2A would disturb more sage-grouse habitat than the comparison portion of the Proposed Route (33 acres vs. 24) and would impact more acres of mineral leases (106 acres vs. 84). Alternative 2A would impact more big game winter range than the comparison portion of the Proposed Route (40 acres vs. 8). Alternative 2A would also impact more acres of wetlands than the comparison portion of the Proposed Route (17.2 acres vs. 3.7). Both Alternative 2A and the comparison portion of the Proposed Route would cross the Continental Divide SRMA; in addition, the comparison portion of the Proposed Route would cross the North Platte River SRMA.

Alternative 2B was originally considered by the Proponents as the Proposed Route. Due to local landowner concerns and visual impacts to visitors to the Fort Fred Steele State Historic Site located on the North Platte River as well as several eagle nests in the area, the Proponents relocated the Proposed Route several miles to the south, and BLM left the original Proposed Route as an alternative to be analyzed in detail. This alternative would affect a similar amount of sage-grouse habitat (17 acres vs. 15) and would affect slightly less big game winter range than the comparison portion of the Proposed Route (17 acres vs. 21). Alternative 2B would affect fewer acres of mineral leases (55 acres vs. 82). Alternative 2B would, however, affect more acres of wetland and riparian areas than the comparison portion of the Preferred/Proposed Route (20.9 acres vs. 3.7). Alternative 2B would cross the Continental Divide SRMA, whereas the corresponding portion of the Proposed Route would cross both the Continental Divide SRMA and the North Platte River SRMA. Alternative 2B would be more visible from the Fort Fred Steele State Historic Site than the comparison portion of the Preferred/Proposed Route.

Table 2.8-2. Alternatives 2A and 2B Compared to the Preferred/Proposed Route

Comparison Features	Unit	Preferred/ Proposed Segment 2 Total Length	Preferred/Proposed Comparison Portion for Alt. 2A	Alt. 2A	Preferred/Proposed Comparison Portion for Alt.2B	Alt. 2B
General						
Total Length	miles[1/]	91.9	16.8	16.0	12.5	12.2
Construction Disturbance Area	acres[2/]	1,780	309	355	238	209
Operations Disturbance Area	acres	245	28	40	21	17
Land Ownership and Use						
BLM	miles	37.6	6.1	6.1	4.6	3.2
Forest Service	miles	–	–	–	–	–
Other Federal	miles	–	–	–	–	–
State	miles	4.8	0.8	0.8	0.8	1.3
Private	miles	49.5	9.9	9.9	7.1	7.8
Indian Reservation	miles	–	–	–	–	–
WWE Corridor[3/]	miles	12.8	0.9	3.8	-	1.5
Within or Adjacent to Existing Transmission Corridor	miles	39.8	2.3	12.1	0.6	6.7
Resource Summaries						
Visual						
VRM I or II crossed	miles	–	–	–	–	–
Cultural						
Potentially affected prehistoric cultural resources	number	334	45	34	37	39
Potentially affected historic cultural resources[4/]	number	67	21	23	22	24
Wildlife						
Designated big game winter range affected (operations)	acres	245	8	40	21	17
Raptor nests within 1 mile	number	190	34	10	31	22
Sage-grouse habitat affected (operations)	acres	228	24	33	17	15
Vegetation						
Forest and woodland vegetation removed (construction)	acres	7	–	–	–	–
Wetland / Riparian disturbance (construction)	acres	8.8	3.7	17.2	3.7	20.9

Table 2.8-2. Alternatives 2A and 2B Compared to the Preferred/Proposed Route (continued)

Comparison Features	Unit	Preferred/ Proposed Segment 2 Total Length	Preferred/Proposed Comparison Portion for Alt. 2A	Alt. 2A	Preferred/Proposed Comparison Portion for Alt.2B	Alt. 2B
Water						
Waterbody crossings	number	183	31	42	24	21
Temperature- or sediment-impaired stream crossings	number	–	–	–	–	–
Soils/Minerals						
Highly erodible soils impacted (high K factor, construction)	acres	59	–	–	–	–
Mineral area (construction)	acres	376	84	106	82	55
Land Use/Recreation						
BLM Plan Amendment would be required	Yes/No	Yes	Yes	Yes	Yes	Yes
Residences within 300 feet of centerline	number	–	–	–	–	1
Residences within 1,000 feet of centerline	number	1	1	–	1	6
Agriculture						
Dryland farming impacted (operations)	acres	–	–	–	–	–
Irrigated Agriculture impacted (operations)	acres	–	–	–	–	–

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy, a utility corridor generally 3,000 feet wide.
4/ Includes trails.

2.8.3 Alternatives 4B, 4C, 4D, 4E, 4F, and 4G Compared to the Preferred/Proposed Route

Segment 4 would link the proposed Anticline Substation and the existing Populus Substation near Downey, Idaho, with a single-circuit 500-kV line. Its proposed length is approximately 197.6 miles. This segment generally follows an existing transmission line corridor. Segment 4 was revised to follow Alternative 4A, as analyzed in the Draft EIS, based on public comments. Segment 4 has five Route Alternatives in the middle portion of its route; however the first 52 miles to the east and the last 61 miles to the west (in Idaho) do not have any route alternatives except for Alternative 4G, a 2.6-mile alternative in the Caribou-Targhee NF. The middle section of the Proposed Route is approximately 85.2 miles long, and its alternatives vary from approximately 87.5 to 102.2 miles long. Alternatives 4B through 4E were proposed by the BLM Kemmerer FO (with input from various cooperating agencies), with the intent to avoid impacts to cultural resources to the extent practical. Alternative 4F was proposed by the Proponents to avoid impacts to cultural resources while still remaining north of the existing Bridger Lines. Table 2.8-3 compares effects to key resources under each Route Alternative. Alternative 4G was proposed by the Forest Service in order to avoid unstable soils identified along the Proposed Route during the 2012 soil assessment (it is located within Sections 1 and 2, Township 12 South, Range 41 East). Figures A-5 and A-6 in Appendix A show the location of the Segment 4 routes in Wyoming and Idaho, respectively.

Alternatives 4B through 4F would not be consistent with EO 2011-5, whereas the comparison portion of the BLM-Preferred/Proposed Route would be consistent and was recommended by the Office of the Governor of Wyoming. Alternative 4F would affect the least sage-grouse habitat (176 acres, slightly less than the 179 acres for the comparison portion of the BLM-Preferred/Proposed Route) and 4B and 4D would affect the most (232 and 234 acres, respectively). The comparison portion of the Proposed Route and all of the alternatives would have similar permanent impacts to designated big game winter range; the alternatives would, however, come within one mile of fewer raptor nests (22 to 32 vs. 41). All of the alternatives would also impact less wetland area than the comparison portion of the BLM-Preferred/Proposed Route (46.9 to 58.8 acres vs. 71.6).

Alternatives 4B through 4F would cross, or be in proximity to, more land uses where visual impacts to recreationally and culturally sensitive areas are possible, such as the Cokeville NWR (Alternatives 4B through 4E), the Bear River Special Management Area (Alternatives 4B through 4E), the Raymond Mountain Special Management Area (Alternative 4F), and Fossil Butte National Monument (Alternatives 4B and 4C); however, except for Alternative 4F, these alternatives would cross less VRM Class II land than the comparison portion of the BLM-Preferred/Proposed Route. Overall, visual impacts would be least under Alternative 4D. Alternatives 4D, 4E, and 4F would have the fewest historic cultural resource impacts; Alternative 4B would affect the most cultural resources.

Alternative 4G was identified by the Forest Service following soil surveys in the fall of 2012. The key factors considered for this route were steep slopes and goshawk habitat. Alternative 4G would be 2.6 miles long compared to 2.3 miles for the comparison portion of the Proposed Route. Alternative 4G would impact 3 acres soils with a high erosion rating vs. 8 acres for the comparison portion of the Proposed Route. However, while both

alternatives would impact goshawk foraging habitat, Alternative 4G would also impact 12 acres of goshawk nesting habitat. The comparison portion of the Proposed Route would not impact goshawk nesting habitat or post-fledging family habitat. Alternative 4G would impact fewer acres of sage-grouse habitat than the comparison portion of the Proposed Route (9 acres vs. 12) and a similar amount of wetlands (0.1 acres). Alternative 4G is the Forest Service's Preferred Route.

Table 2.8-3. Alternatives 4B, 4C, 4D, 4E, 4F, and 4G Compared to the Preferred/Proposed Route

Comparison Features	Unit	Preferred/ Proposed Segment 4 Total Length	Preferred/ Proposed Comparison Portion for Alt. 4B–4F	Alt. 4B	Alt. 4C	Alt. 4D	Alt. 4E	Alt. 4F	Proposed Comparison Portion for Alt. 4G	Alt. 4G
General										
Total Length	miles[1/]	197.6	85.2	100.2	101.6	100.8	102.2	87.5	0.3	0.6
Construction Disturbance Area	acres[2/]	3,896	1,712	2,083	2,072	2,110	2,080	1,727	80	108
Operations Disturbance Area	acres	530	213	273	265	280	269	214	68	83
Land Ownership and Use										
BLM	miles	72.2	43.0	50.6	46.9	52.1	48.4	45.2	–	–
Forest Service	miles	9.1	–	–	–	–	–	–	0.3	0.6
Other Federal	miles	3.1	3.1	0.6	1.2	0.6	1.2	3.1	–	–
State	miles	12.7	4.7	8.1	8.7	6.7	7.2	3.6	–	–
Private	miles	100.7	34.4	41.0	44.9	41.4	45.3	35.7	–	–
Indian Reservation	miles	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	11.9	–	–	–	–	–	–	–	–
Within or adjacent to existing transmission corridors	miles	83.2	36.1	17.7	17.8	14.7	14.7	30.5	–	–
Resource Summaries										
Visual										
Forest Service Retention and Partial Retention VQOs Crossed	miles	9.1	–	–	–	–	–	–	0.3	0.6
VRM I or II crossed	miles	14.3	13.5	7.3	12.5	4.3	9.5	16.4	–	–
Cultural										
Potentially affected pre-historic cultural resources	number	574	212	379	377	361	359	195	–	–
Potentially affected historic cultural resources[4/]	number	94	78	86	82	75	71	67	5	5
Wildlife										
Designated big game winter range affected (operations)	acres	403	153	162	154	169	159	151	1	1
Raptor nests within 1 mile	number	122	41	22	22	22	22	32	2	2
Sage-Grouse habitat affected (operations)	acres	420	179	232	224	234	222	176	2	2

Table 2.8-3. Alternatives 4B, 4C, 4D, 4E, 4F, and 4G Compared to the Preferred/Proposed Route (continued)

Comparison Features	Unit	Preferred/ Proposed Segment 4 Total Length	Preferred/ Proposed Comparison Portion for Alt. 4B–4F	Alt. 4B	Alt. 4C	Alt. 4D	Alt. 4E	Alt. 4F	Proposed Comparison Portion for Alt. 4G	Alt. 4G
Vegetation										
Forest and woodland vegetation removed (construction)	acres	552	47	5	3	8	7	91	73	98
Wetland/Riparian disturbance (construction)	acres	113.4	71.6	49.9	46.9	50.0	47.1	58.8	<0.1	<0.1
Water/Fish										
Waterbody crossings	number	442	242	375	354	413	387	220	5	3
Temperature- or Sediment-impaired stream crossings	number	5	1	1	1	1	1	1	–	–
Soils/Minerals										
Highly erodible soils impacted (high K, factor, construction)	acres	1,788	559	808	819	809	808	577	7	2
Mineral area (construction)	acres	549	329	750	667	794	705	266	–	–
Land Use/Recreation										
BLM or Forest Service Plan Amendment would be required	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residences within 300 feet of the centerline	number	0	-	–	–	–	–	–	–	–
Residences within 1,000 feet of the centerline	number	12	2	1	2	1	2	3	–	–
Agriculture										
Dryland farming Impacted (operations)	acres	9	–	2	–	2	–	–	–	–
Irrigated Agriculture Impacted (operations)	acres	3	1	2	1	2	1	2	–	–

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy, a utility corridor generally 3,000 feet wide.
4/ Includes trails.

2.8.4 Alternatives 5A, 5B, 5C, 5D, and 5E Compared to the Preferred Route and Proposed Route

The BLM's Preferred Route in Segment 5 consists of the Proposed Route incorporating Alternatives 5B and 5E. Segment 5 alternatives were identified through scoping and in discussions with various stakeholders. Among the key factors considered in routing this segment were visual resources near the Deep Creek Mountains, agriculture in the Arbon and Rockland Valleys, crossing the Fort Hall Indian Reservation, residential developments, the Arbon Elementary School, and the East Fork Rock Creek Recreation Area, as well as potential disturbance to nesting bald eagles along the Snake River. Table 2.8-4 compares effects to resources under each Route Alternative. Figure A-7 in Appendix A shows the Proposed Route and Route Alternatives.

Alternatives 5A and 5B were developed to reduce visual impacts and limit road construction on forested BLM-managed lands in the Deep Creek Mountains. Unlike the Proposed Route, both alternatives would avoid the recreation area. Alternatives 5A and 5B would come within one mile of three and two raptor nests, respectively, whereas the comparison portion of the Proposed Route would only cross one raptor nest buffer. Both Alternatives 5A and 5B would impact more sage grouse habitat (38 and 44 acres) as compared to the Proposed Route (26 acres). Alternative 5A would come within 1,000 feet of four residences, compared to five for Alternative 5B and one for the comparison portion of the Proposed Route. The Proposed Route would cross within 1,000 feet of an elementary school, while neither 5A nor 5B would be within 1,000 feet of a school.

Alternative 5C would parallel an existing transmission line through the Fort Hall Indian Reservation, rather than create a new corridor. In doing so, the length and overall impacts would be less under Alternative 5C than the comparison portion of the Proposed Route. However, Alternative 5C would result in additional visual and cultural impacts to the Fort Hall Indian Reservation. Alternative 5C is the preferred route of Power County. Alternative 5C does not cross within 1,000 feet of a residence or school, while the comparison portion of the Proposed Route crosses within 1,000 feet of one residence. The Fort Hall Business Council has formally denied this route.

Alternative 5D was the Proponents' original Proposed Route, but issues were raised by local landowners about impacts to agricultural land. The Proponents agreed to move their Proposed Route several miles to the east and keep the original Proposed Route as an alternative to be analyzed in detail (Alternative 5D). Alternative 5D would affect more dryland farming than would be impacted by the comparison portion of the Proposed Route, but slightly less irrigated agricultural land. Additionally, Alternative 5D would be more visible from residences in the Rockland Valley compared to the Proposed Route, which takes better advantage of topography to minimize visual impacts from the valley. However, it would cross within 1,000 feet of 24 residences, compared to 10 for the comparison portion of the Proposed Route.

Alternative 5E was developed as an alternative approach to the crossing of the Snake River as requested by Power County. However, it would not meet the separation criteria (minimum of 1,500 feet) from existing high-voltage transmission lines the Proponents established as part of their Project objectives. Because it would be adjacent to an existing line, Alternative 5E would have fewer visual effects than the comparison portion of the Proposed Route, would also avoid potential disturbance to nesting raptors, and would affect less agricultural land. It would cross within 1,000 feet of 2 residences compared to 10 for the comparison portion of the Proposed Route.

Table 2.8-4. Alternatives 5A, 5B, 5C, 5D, and 5E Compared to the Preferred and Proposed Routes

Comparison Features	Unit	BLM Preferred Segment 5 Total Length	Proposed Segment 5 Total Length	Proposed Comparison Portion for Alts. 5A and 5B / Alt. 5A / Alt. 5B			Proposed Comparison Portion for Alt. 5C / Alt. 5C		Proposed Comparison Portion for Alt. 5D /Alt. 5D		Proposed Comparison Portion for Alt. 5E /Alt. 5E	
General												
Total Length	miles[1/]	73.3	55.7	22.3	29.7	40.4	32.9	26.0	19.2	17.0	5.8	5.3
Construction Disturbance Area	acres[2/]	1,551	1,179	461	644	842	731	509	484	416	174	165
Operations Disturbance Area	acres	193	169	58	80	82	94	56	63	53	24	24
Land Ownership and Use												
BLM	miles	13.8	13.2	7.2	8.6	8.8	8.7	–	2.6	–	1.2	0.2
Forest Service	miles	–	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	12.4	–	–	–	–
State	miles	1.0	3.6	3.0	0.3	0.3	3.5	0.7	0.6	0.4	0.1	0.2
Private	miles	58.3	38.7	12.1	20.9	31.3	20.7	12.8	16.0	16.7	4.5	4.9
Indian Reservation	miles	–	–	–	–	–	–	12.4	–	–	–	–
WWE Corridor[3/]	miles	–	–	–	–	–	–	–	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	11.1	6.4	0.6	0.6	0.6	0.7	17.6	4.7	1.0	.6	5.3
Resource Summaries												
Visual												
VRM I or II crossed	miles	–	1.6	1.5	–	–	1.5	–	0.1	–	0.1	–
Potentially affected pre-historic cultural resources	number	35.0	34	1	7	4	3	1	22	21	20	18
Cultural												
Potentially affected historic cultural resources[4/]	number	12.0	13	1	4	2	–	–	10	9	10	8
Wildlife												
Designated big game winter range affected (operations)	acres	94	78	23	28	38	60	20	43	30	4	5
Raptor nests within 1 mile	number	3	4	1	3	2	1	–	3	3	2	–
Sage-Grouse Habitat affected (operations)	acres	27	9	26	38	44	41	29	35	24	17	17

Table 2.8-4. Alternatives 5A, 5B, 5C, 5D, and 5E Compared to the Preferred and Proposed Routes (continued)

Comparison Features	Unit	BLM Preferred Segment 5 Total Length	Proposed Segment 5 Total Length	Proposed Comparison Portion for Alts. 5A and 5B / Alt. 5A / Alt. 5B			Proposed Comparison Portion for Alt. 5C / Alt. 5C		Proposed Comparison Portion for Alt. 5D / Alt. 5D		Proposed Comparison Portion for Alt. 5E / Alt. 5E	
Vegetation												
Forest and woodland vegetation removed (construction)	acres	421	543	301	275	184	444	163	150	157	6	<1
Wetland/Riparian disturbance (construction)	acres	7.3	6.4	0.2	1.4	2.2	3.1	6.8	4.3	3.6	1.4	0.2
Water/Fish												
Waterbody crossings	number	191	171	77	78	96	146	52	75	51	5	6
Temperature- or sediment-impaired stream crossings	number	52	64	51	31	39	64	6	12	14	–	–
Soils/Minerals												
Highly erodible soils impacted (high K factor, construction)	acres	1.401	1,028	396	515	790	666	509	404	343	95	74
Mineral area (construction)	acres	–	–	–	–	–	–	–	–	–	–	–
Land Use / Recreation												
BLM or Forest Service Plan Amendment would be required	Yes/No	No	Yes	Yes	No	No	Yes	No	Yes	No	Yes	No
Residences within 300 feet of centerline	number	4	2	–	1	2	–	–	–	2	–	–
Residences within 1,000 feet of centerline	number	16	20	1	4	5	1	–	10	24	10	2
Agriculture												
Dryland farming impacted (operations)	acres	27	13	7	12	22	10	7	5	8	1	–
Irrigated Agriculture impacted (operations)	acres	5	6	<1	<1	1	<1	–	3	2	3	2

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy, a utility corridor generally 3,000 feet wide.
4/ Includes trails.

2.8.5 Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, and 7K Compared to the Preferred Route and Proposed Route

The Segment 7 Preferred Route consists of the Proposed Route incorporating Alternatives 7B, 7C, 7D, and 7G. Key factors considered in routing the first third of Segment 7 were similar to those discussed under Segment 5, because the segments parallel one another to the point west of the Deep Creek Mountains where they diverge. Additional factors considered in routing this segment were impacts to agricultural operations, rural residences, a local hang gliding area, visual resources, historic trails, cultural resources, big game winter range, sage-grouse key habitat, Designated Roadless Areas, and local planning goals. Table 2.8-5 compares effects on key resources by each Route Alternative and comparison portion. Figure A-9 in Appendix A shows the Proposed Route and Route Alternatives.

Alternatives 7A and 7B would parallel Alternatives 5A and 5B to the point where they exit the Deep Creek Mountains; therefore, their purpose for development and issues were discussed in Section 2.8.4. Both alternatives would affect less big game winter range than the comparison portion of the Proposed Route (20 and 22 acres, respectively, vs. 32) but more sage-grouse habitat (43 and 50 acres, respectively, vs. 29 acres). Alternative 7B would impact more agricultural land (23 acres vs. 12) than the comparison portion, Alternative 7A approximately the same; both alternatives would cross within 1,000 feet of three residences, compared to one for the comparison portion of the Proposed Route.

Alternative 7C was developed to reduce impacts to sage-grouse (8 acres), whereas the comparison portion of the Proposed Route would impact 14 acres of habitat. Alternative 7C would impact more big game winter range (9 acres vs. 6). It would affect less agricultural land than the comparison portion of the Proposed Route (6 acres vs. 11). This alternative would be farther from the Parting of the Ways location on the NHT system. This alternative would cross within 1,000 feet of two residences, compared to none for the comparison portion of the Proposed Route.

Alternative 7D was developed to avoid BLM-managed lands that have an easement restriction that does not allow both transmission line segments to cross the Oregon and California NHTs. Alternative 7D would impact the same amount of sage-grouse habitat as the comparison portion of the Proposed Route (5 acres) and would impact the same amount of big game winter range (4 acres). Neither Alternative 7D nor the comparison portion of the Proposed Route would cross within 1,000 feet of a residence and both impact a similar amount of agricultural land (2 acres).

Alternative 7E was developed to avoid two sage-grouse leks, sage-grouse habitat in the Water Canyon area, and a local recreational area used as a hang glider launch site. Alternative 7E would impact slightly more sage-grouse habitat than the comparison portion of the Proposed Route (7 acres vs. 4). Alternative 7E would cross within 1,000 feet of three residences, compared to six for the comparison portion of the Proposed Route. Both Alternative 7E and the comparison portion of the Proposed Route would impact a trace amount of agricultural land.

Alternative 7F was developed to avoid visual impacts to residential development in the Delco area. This alternative would cross less private land than the comparison portion of the Proposed Route; however, it would cross a scenic byway to the town of Albion. Alternative 7F would impact more big game winter range (22 acres vs. 18) and more sage-grouse habitat (15 acres vs. 13) than the comparison portion of the Proposed Route, although it would not avoid the Water Canyon area. This alternative would impact slightly less agricultural land (5 acres vs. 7) than the comparison portion of the Proposed Route. It would not cross within 1,000 feet of a residence whereas the comparison portion of the Proposed Route would cross within 1,000 feet of six.

Alternative 7G was developed to minimize the extent to which the transmission line would be within a BLM motorized vehicle winter closure area. This vehicle closure area is designated for wintering big game and sage-grouse. Alternative 7G would cross along the northern border of the vehicle closure area, whereas the comparison portion of the Proposed Route would cross farther within. Despite this difference, Alternative 7G would disturb the same amount of big game winter range (4 acres), though less sage-grouse habitat (less than 1 acre vs. 3) as the comparison portion of the Proposed Route. Alternative 7G would also disturb the same amount of agricultural land than the comparison portion of the Proposed Route (2 acres). Both Alternative 7G and the comparison portion of the Proposed Route would cross within 1,000 feet of one residence and affect a planned runway at the Dry Creek Sky Ranch.

Through a lengthy process of collaboration with the landowners; local, state, and federal agencies, and the Proponents, Alternative 7K was developed to avoid proximity to agricultural facilities (e.g., dairies and agricultural land). Alternative 7K would cross less private land than the comparison portion of the Proposed Route; however, it would be longer and may impact visitors to the City of Rocks Natural Reserve and sensitive viewing areas such as Granite Pass, Sparks Basin, and the California NHT-South Lake Alternate. Alternative 7K was presented and supported by local landowners over the Proposed Route; however, it is not supported by the Proponents due to the higher cost. This alternative would impact more big game winter habitat (129 acres vs. 89) and more sage-grouse habitat (259 acres vs. 112) than the comparison portion of the Proposed Route. It would cross less farmland (35 acres vs. 77) and pass within 1,000 feet of fewer houses (5 vs. 20) than the comparison portion of the Proposed Route.

Table 2.8-5. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, and 7K Compared to the Preferred and Proposed Routes

Comparison Features	Unit	BLM Preferred Segment 7 Total Length	Proposed Segment 7 Total Length	Proposed Comparison Portion for Alts. 7A and 7B Alt. 7A / Alt. 7B			Proposed Comparison Portion for Alt. 7C / Alt. 7C		Proposed Comparison Portion for Alt. 7D / Alt. 7D	
General										
Total Length	miles[1/]	130.2	118.2	35.1	37.7	46.2	20.1	20.3	6.2	6.8
Construction Disturbance Area	acres[2/]	2,554	2,252	652	774	920	372	362	132	153
Operations Disturbance Area	acres	284	265	71	93	96	36	28	11	13
Land Ownership and Use										
BLM	miles	25.1	28.1	7.3	7.2	7.7	9.1	7.2	1.7	0.1
Forest Service	miles	–	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	–	–	–
State	miles	2.0	4.3	3.8	–	–	–	1.0	0.5	1.0
Private	miles	102.6	85.5	24.1	30.5	38.5	11.0	12.0	4.0	5.7
Indian Reservation	miles	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	0.5	0.5	–	–	–	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	16.9	17.0	0.6	0.6	0.6	–	–	1.1	1.0
Resource Summaries										
Visual										
Forest Service Modification VQO Crossed	miles	–	–	–	–	–	–	–	–	–
VRM I or II crossed	miles	0.1	1.4	1.3	–	–	–	–	–	–
Cultural										
Potentially affected pre-historic cultural resources	number	21	21	3	7	4	2	1	3	3
Potentially affected historic cultural resources[4/]	number	25	22	3	6	4	6	5	4	7
Wildlife										
Designated big game winter range affected (operations)	acres	82	89	32	20	22	6	9	4	4
Raptor nests within 1 mile	number	9	14	–	–	–	4	–	2	1
Sage Grouse Habitat affected (operations)	acres	125	112	29	43	50	14	8	5	5

Table 2.8-5. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, and 7K Compared to the Preferred and Proposed Routes (continued)

Comparison Features	Unit	Proposed Comparison Portion for Alt. 7E / Alt. 7E		Proposed Comparison Portion for Alt. 7F / Alt. 7F		Proposed Comparison Portion for Alt. 7G / Alt. 7G		Proposed Comparison Portion for Alt. 7K / Alt. 7K	
General									
Total Length	miles[1/]	3.8	4.5	10.5	10.8	3.3	3.4	118.2	148.1
Construction Disturbance Area	acres[2/]	72	96	225	213	64	87	2,249	2,859
Operations Disturbance Area	acres	5	9	23	23	6	6	264	382
Land Ownership and Use									
BLM	miles	0.3	1.9	1.3	4.4	2.5	2.6	28.1	72.5
Forest Service	miles	–	–	–	–	–	–	–	12.7
Other Federal	miles	–	–	–	–	–	–	–	–
State	miles	–	–	–	–	–	–	4.3	7.8
Private	miles	3.5	2.6	9.2	6.4	0.8	0.8	85.8	55.1
Indian Reservation	miles	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	–	–	–	–	0.2	0.2	0.5	0.5
Within or Adjacent to Existing Transmission Corridor	miles	1.0	0.7	3.1	0.9	0.5	0.5	17.0	14.4
Resource Summaries									
Visual									
Forest Service Modification VQO Crossed	miles	–	–	–	–	–	–	–	4.0
VRM I or II crossed	miles	<0.1	0.3	<0.1	–	–	–	1.4	0.9
Cultural									
Potentially affected pre-historic cultural resources	number	–	–	1	1	2	2	2	37
Potentially affected historic cultural resources[4/]	number	3	3	3	3	2	2	22	19
Wildlife									
Designated big game winter range affected (operations)	acres	4	9	18	22	4	4	89	129
Raptor nests within 1 mile	number	8	8	8	8	–	–	14	80
Sage-Grouse Habitat affected (operations)	acres	4	7	13	15	3	<1	112	259

Table 2.8-5. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, and 7K Compared to the Preferred and Proposed Routes (continued)

Comparison Features	Unit	BLM Preferred Segment 7 Total Length	Proposed Segment 7 Total Length	Proposed Comparison Portion for Alts. 7A and 7B / Alt. 7A / Alt. 7B			Proposed Comparison Portion for Alt. 7C / Alt. 7C		Proposed Comparison Portion for Alt. 7D / Alt. 7D	
Vegetation										
Forest/woodland vegetation removed (construction)	acres	345.0	516	313	300	143	–	–	9	8
Wetland/Riparian disturbance (construction)	acres	7.1	6.1	0.9	8.9	1.5	0.1	–	3.6	3.9
Water/Fish										
Waterbody crossings	number	278.0	260	83	106	98	17	24	17	17
Temperature- or sediment-impaired streams crossed	number	39.0	57	55	45	37	–	–	–	–
Soils/Minerals										
Highly erodible soils impacted (High K factor, construction)	acres	2,473.0	2,159	594	648	875	372	361	132	153
Mineral area (construction)	acres	3.0	–	–	–	3	–	–	–	–
Land Use / Recreation										
BLM or Forest Service Plan Amendment would be required	Yes/No	No	Yes	No	No	No	No	No	No	No
Residences within 300 feet of centerline	number	8.0	7	1	–	1	–	–	–	–
Residences within 1,000 feet of centerline	number	24.0	20	1	3	3	–	2	–	–
Agriculture										
Dryland farming impacted (operations)	acres	49.0	41	12	12	23	7	5	<1	–
Irrigated agriculture impacted (operations)	acres	33.0	36	<1	1	<1	4	1	2	2

Table 2.8-5. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, and 7K Compared to the Preferred and Proposed Routes (continued)

Comparison Features	Unit	Proposed Comparison Portion for Alt. 7E / Alt. 7E		Proposed Comparison Portion for Alt. 7F / Alt. 7F		Proposed Comparison Portion for Alt. 7G / Alt. 7G		Proposed Comparison Portion for Alt. 7K / Alt. 7K	
Vegetation									
Forest/woodland vegetation removed (construction)	acres	14	26	103	111	–	–	516	1019
Wetland/Riparian disturbance (construction)	acres	–	–	0.5	0.1	--	1.1	6.0	16.4
Water/Fish									
Waterbody crossings	number	5	7	32	19	4	–	260	486
Temperature- or Sediment-impaired stream crossings	number	–	–	–	–	–	–	57	25
Soils/ Minerals									
Highly erodible soils impacted (High K factor, construction)	acres	72	96	225	213	64	87	2,156	2,620
Mineral area (construction)	acres	–	–	–	–	–	–	–	92
Land Use/ Recreation									
BLM or Forest Service Plan Amendment would be required	Yes/No	No	Yes	No	No	No	No	Yes	Yes
Residences within 300 feet of centerline	number	1	1	1	–	-	1	7	1
Residences within 1,000 feet of centerline	number	6	3	6	–	1	1	20	5
Agriculture									
Dryland farming impacted (operations)	acres	t[5/]	t[5/]	4	4	–	–	41	16
Irrigated agriculture impacted (operations)	acres	<1	–	3	1	2	2	36	19

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy, a corridor that is generally 3,000 feet wide.
4/ Includes trails.
5/ Value is less than 0.1 acre.

2.8.6 Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Preferred route and Proposed Route

The Segment 8 Preferred Route consists of the Proposed Route incorporating Alternative 8B. Key factors considered in routing this segment included using the WWE corridor where possible, conflicts with agricultural lands, residential development, visual resources, the SRBOP, a National Register Historic District, and the IDANG OCTC. Table 2.8-6 compares effects to key resources from the Proposed Route and each Route Alternative. Figure A-10 in Appendix A shows the Preferred Route, Proposed Route, and Route Alternatives.

Alternative 8A was developed to maximize use of the WWE corridor. This alternative would cross 6.8 miles of VRM Class I or II land whereas the comparison portion of the Proposed Route would cross 9.8 miles. Alternative 8A would be close to the communities of Hagerman and Glenns Ferry, the Hagerman Fossil Beds, and the Billingsley Creek Wildlife Management Area. This alternative would potentially impact more historic cultural resources than its comparison portion of the Proposed Route (117 vs. 48). It would cross within 1,000 feet of 46 residences compared to 13 for the comparison portion of the Proposed Route. It would affect the same amount of agricultural land (14 acres).

Alternative 8B was originally considered for the Proposed Route to avoid the SRBOP and the OCTC. The Proposed Route was revised due to opposition from the cities of Kuna and Melba, Idaho, and the original route was retained as an alternative. Alternative 8B is in close proximity to several residential areas, crossing within 1,000 feet of 60 residences compared to 12 for the comparison portion of the Proposed Route, resulting in greater visual effects on these communities. This alternative would cross within the Kuna city boundary and may affect future development patterns. This alternative would cross private land along the northern edge of the SRBOP. Alternative 8B would affect more agricultural land (9 acres vs. less than 1) than the comparison portion of the Proposed Route. Unlike the Proposed Route, it would not cross the National Register Historic District.

Alternative 8C was also originally considered as part of the Proposed Route. However, it would have an adverse visual impact on residential areas. Alternative 8C would cross within 1,000 feet of one residence and it would be close to a planned expansion of the planned Mayfield Springs community. The comparison portion of the Proposed Route would not be within 1,000 feet of any residences and would not affect the planned subdivision. Alternative 8C would avoid crossing the SRBOP. Neither Alternative 8C nor the comparison portion of the Proposed Route would permanently impact agricultural land.

Alternative 8D was developed to avoid the Alpha Maneuver Sector of the OCTC (but not the Bravo Sector). The IDANG has commented that it would prefer a route that completely avoids the training area. Other environmental impacts would be similar to the comparison portion of the Proposed Route, except that Alternative 8D would impact more land with highly erodible soils (174 acres vs. 47). Transmission structures near the training area would include special lights to provide for pilot safety. Like the

Proposed Route, Alternative 8D would cross the SRBOP, which would not meet the intent of its enabling legislation.

Alternative 8E was developed to avoid a non-motorized area in a National Register Historic District. This route would cross the SRBOP, which would not meet the intent of its enabling legislation. It would cross within a mile of more raptor nests (492 vs. 84) than the comparison portion of the Proposed Route. Neither this alternative nor the comparison portion of the Proposed Route would cross within 1,000 feet of a residence. However, 8E would follow a portion of Alternative 9D. If that route is selected, Alternative 8E could not be used. Conversely, if Alternative 8E is selected, the Alternative 9D route could not be used.

Table 2.8-6. Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Preferred and Proposed Routes

Comparison Features	Unit	BLM Preferred Segment 8 Total Length	Proposed Segment 8 Total Length	Proposed Comparison Portion for Alt. 8A / Alt. 8A		Proposed Comparison Portion for Alt. 8B / Alt. 8B		Proposed Comparison Portion for Alt. 8C / Alt. 8C		Proposed Comparison Portion for Alt. 8D / Alt. 8D		Proposed Comparison Portion for Alt. 8E / Alt. 8E	
General													
Total Length	miles[1/]	132.0	131.5	51.9	53.6	45.3	45.8	6.5	6.4	6.9	8.1	7.0	18.3
Construction Disturbance Area	acres[2/]	2,535.0	2,518	963	978	899	916	163	140	147	174	124	334
Operations Disturbance Area	acres	231	249	102	103	87	69	15	16	15	15	10	26
Land Ownership and Use													
BLM	miles	61.3	87.1	31.5	25.1	40.0	14.2	5.5	2.3	6.9	2.9	4.6	17.7
Forest Service	miles	–	–	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	2.4	3.5	–	–	2.6	1.5	0.3	–	–	–	1.8	0.1
State	miles	12.3	9.4	2.3	6.5	0.1	3.0	–	0.3	–	1.0	0.1	0.1
Private	miles	56.1	31.5	18.1	21.9	2.5	27.1	0.8	3.9	–	4.2	0.4	0.3
Indian Reservation	miles	–	–	–	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	14.5	18.8	t	18.9	5.3	1.0	0.8	1.9	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	93.2	98.5	45.1	42.0	19.8	14.5	2.2	4.8	3.7	1.7	2.5	10.8
Resource Summaries													
Visual													
VRM I or II crossed	miles	9.8	13.9	9.8	6.8	4.15	–	–	–	–	–	1.4	2.2
Potentially affected pre-historic cultural resources	number	32	46	20	57	25	11	–	–	3	13	17	13
Cultural													
Potentially affected historic cultural resources[4/]	number	66	82	28	60	45	29	–	4	6	6	21	10
Wildlife													
Designated big game winter range affected (operations)	acres	131	131	86	48	11	11	11	15	–	–	–	1
Raptor nests within 1 mile	number	87	307	9	23	274	54	13	18	39	44	184	492
Sage-grouse Habitat affected (operations)	acres	141	150	71	60	43	34	9	8	5	4	4	14

Table 2.8-6. Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Preferred and Proposed Routes (continued)

Comparison Features	Unit	BLM Preferred Segment 8 Total Length	Proposed Segment 8 Total Length	Proposed Comparison Portion for Alt. 8A / Alt. 8A		Proposed Comparison Portion for Alt. 8B / Alt. 8B		Proposed Comparison Portion for Alt. 8C / Alt. 8C		Proposed Comparison Portion for Alt. 8D / Alt. 8D		Proposed Comparison Portion for Alt. 8E / Alt. 8E	
Vegetation													
Forest/woodland vegetation removed (construction)	acres	–	–	–	–	–	–	–	–	–	–	–	–
Wetland/Riparian disturbance (construction)	acres	9.9	9.1	2.2	7.0	1.0	8.3	0.2	0.1	t[5/]	t[5/]	–	0.2
Water/Fish													
Waterbodies crossed	number	218	261	59	53	112	69	18	21	8	8	6	14
Temperature- or Sediment-impaired stream crossings	number	48	36	1	2	34	46	6	5	8	8	–	–
Soils/Minerals													
Highly erodible soils impacted (High K factor, construction)	acres	1,852	1,842	337	332	849	859	163	139	47	174	93	334
Mineral area (construction)	acres	3	–	–	–	t[5/]	3	–	–	–	–	–	–
Land Use/Recreation													
BLM or Forest Service Plan Amendment would be required	Yes/No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Residences within 300 feet of centerline	number	28	6	3	7	2	24	–	–	–	1	–	–
Residences within 1,000 feet of centerline	number	74	26	13	46	12	60	–	1	–	1	–	–
Agriculture													
Dryland farming impacted (operations)	acres	–	–	–	–	–	–	–	–	–	–	–	–
Irrigated agriculture impacted (operations)	acres	23	15	14	14	<1	9	–	–	–	2	<1	–

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy
4/ Includes trails.
5/ Value is less than 0.1 acre.

2.8.7 Alternatives 9A, 9B, 9C, 9D, 9E Revised, 9F, 9G, and 9H Compared to the Preferred Route and Proposed Route

The Segment 9 Preferred Route consists of the Proposed Route incorporating Alternative 9E. Key factors considered in routing this segment were agricultural and residential development in Owyhee County, visual resources, the Jarbidge Military Operations Area, Saylor Creek Air Force Range, Balanced Rock County Park, Bruneau Dunes County Park, the Cove Non-Motorized Area, and Salmon Falls Creek WSR. Table 2.8-7 compares effects to key resources from the Proposed Route and each Route Alternative. Figure A-11 in Appendix A shows the Preferred Route, Proposed Route, and Route Alternatives.

Alternative 9A was the Proponents' original Proposed Route. The Proponents worked with local citizens, landowners, and the BLM to move a 7.8-mile portion of the Proposed Route about a mile to the south to avoid impacts to irrigated agriculture and dairies, leaving the original Proposed Route as an alternative to be analyzed in detail. Alternative 9A would cross within 1,000 feet of two residences, whereas the comparison portion of the Proposed Route would not cross within 1,000 feet of a residence. Alternative 9A would permanently impact one acre of agriculture land compared to none for the comparison portion of the Proposed Route.

Alternative 9B was developed to maximize use of the WWE corridor and to parallel existing utility corridors; however, Alternative 9B would have greater visual impacts due to its proximity to private lands, historic trails, and VRM Class I lands. Alternative 9B would be within 1,000 feet of seven residences, compared to none for the comparison portion of the Proposed Route. It would permanently disturb more agricultural land than the comparison portion of the Proposed Route (12 acres vs. none). Alternative 9B would impact less sage-grouse habitat than the comparison portion of the Proposed Route (38 acres vs. 84). Alternative 9B would avoid crossing both the WSR and the eligible WSR portions of Salmon Falls Creek; the comparison portion of the Proposed Route would cross the eligible Recreation portion of the WSR (adjacent to a smaller distribution line and road) but not the wilderness study area. Both Alternative 9B and the comparison portion of the Proposed Route would avoid crossing Balanced Rock County Park.

Alternative 9C would parallel existing transmission lines in corridors for a greater extent than the comparison portion of the Proposed Route (9.2 miles vs. 0.8) but would have a greater visual impact on Balanced Rock County Park due to its proximity. Alternative 9C would be within 1,000 feet of five residences, compared to none for the comparison portion of the Proposed Route. This alternative would permanently impact more agricultural lands than the comparison portion of the Proposed Route (4 acres vs. zero). Alternative 9C would not cross the eligible WSR portion of Salmon Falls Creek whereas the comparison portion of the Proposed Route would cross the eligible Recreation portion.

Alternatives 9D and 9E were developed as a result of collaboration with citizens, landowners, the BLM, the Owyhee County Task Force, and the Proponents to avoid private lands and maximize the use of public lands in Owyhee County. Both alternatives would deviate from the WWE corridor, which would be followed by the

comparison portion of the Proposed Route; however, both alternatives would cross less private land (3.3 vs. 18.2 miles). Alternatives 9D and 9E would not cross within 1,000 feet of a residence, whereas the comparison portion of the Proposed Route would be within 1,000 feet of nine residences. Both alternatives would impact less agricultural lands (2 and 1 acres, respectively, vs. 13 acres). Alternative 9D would cross more BLM-managed VRM Class I or II lands (11.1 miles vs. 0.2) than the comparison portion of the Proposed Route. Alternative 9D would be within the SRBOP for well over half of its length; constructing an additional transmission line across the SRBOP would not meet the intent of the enabling legislation for the SRBOP.

Alternatives 9F and 9G were proposed by the BLM to avoid the non-motorized portion of Swan Falls, avoiding both the Cove Non-Motorized Area and the non-motorized portion of a National Register Historic District. Alternative 9F would cross the river twice, once near the C.J. Strike SRMA and again near the Swan Falls Dam. However, the route it would follow to avoid the non-motorized area in the historic district would be the same alignment that Alternative 8E would follow. If 8E were selected, Alternative 9F could not also be selected. Therefore, Alternative 9G was proposed by the BLM. It would avoid the non-motorized portion of the historic district but not the Cove Non-Motorized Area. Alternative 9G follows the same route as Alternative 9D through the Cove area, then, where Alternative 9D/9G merge with Alternative 9F/9H, it follows the same route as 9H. It would cross the river approximately 3 miles south of the Alternative 9F crossing point. Alternative 9F would be within 1,000 feet of six residences, compared to nine residences for the comparison portion of the Proposed Route, whereas Alternative 9G would not be within 1,000 feet of any residences. Impacts to agricultural land from Alternative 9G and 9F would be less than those for the comparison portion of the Proposed Route. Alternatives 9F and 9G would cross the SRBOP, which would not meet the intent of the enabling legislation for the SRBOP.

Alternative 9H is another route developed by the BLM that would avoid the Cove Non-Motorized Area and the non-motorized portion of a National Register Historic District. Like Alternative 9G, this route was proposed in the event that Alternative 8E was selected and Alternative 9F could not be used. As with Alternative 9F, Alternative 9H would be within 1,000 feet of six residences, compared to nine for the comparison portion of the Proposed Route. Both Alternatives 9F and 9H would cross within 300 feet of two residences, less than the six residences along the comparison portion. Impacts to agricultural land would be similar to those for Alternative 9F. Alternative 9H would cross the SRBOP, which would not meet the intent of the enabling legislation for the SRBOP.

Table 2.8-7. Alternatives 9A, 9B, 9C, 9D, 9E (Revised), 9F, 9G, and 9H Compared to the Preferred and Proposed Routes

Comparison Features	Unit	BLM Preferred Segment 9 Total Length	Proposed Segment 9 Total Length	Proposed Comparison Portion for Alt. 9A / Alt. 9A		Proposed Comparison Portion for Alt. 9B / Alt. 9B		Proposed Comparison Portion for Alt. 9C / Alt. 9C		Proposed Comparison Portion for Alts. 9D,F,G,H / Alt. 9D / Alt. 9F / Alt. 9G / Alt. 9H					Proposed Comparison Portion for Alt. 9E (rev.) / Alt. 9E (rev.)	
General																
Total Length	miles[1/]	171.4	162.2	7.8	7.7	49.1	52.3	14.4	14.4	57.2	60.1	63.3	57.8	61.0	61.4	70.6
Construction Disturbance Area	acres[2/]	3,352	3,293	147	162	1,037	965	304	320	1,145	1,046	1,165	1,058	1,162	1,230	1,289
Operations Disturbance Area	acres	379	360	15	14	122	83	27	26	106	84	93	87	96	116	135
Land Ownership and Use																
BLM	miles	153.5	129.4	6.0	5.5	45.6	32.2	13.3	7.4	37.8	52.6	47.0	49.3	43.7	42.0	66.1
Forest Service	miles	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	–	–	–	0.1	0.1	1.3	1.3	–	–
State	miles	4.7	4.6	–	–	1.1	1.0	1.1	–	1.1	4.1	4.1	4.1	4.1	1.1	1.2
Private	miles	13.4	28.3	1.8	2.2	2.4	19.1	–	7.0	18.2	3.3	12.1	3.0	11.9	18.2	3.3
Indian Reservation	miles	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	27.9	53.9	t[5/]	t[5/]	3.8	28.2	–	–	32.8	0.4	8.4	0.4	–	32.8	6.8
Within or Adjacent to Existing Transmission Corridor	miles	46.4	84.8	0.4	2.3	6.0	52.3	0.8	9.2	48.5	31.2	42.5	25.6	36.8	48.5	10.1
Resource Summaries																
Visual																
VRM I or II crossed	miles	5.2	5.4	–	–	3.5	1.6	3.5	0.1	0.2	11.1	5.0	16.5	10.4	0.2	–
Potentially affected pre-historic cultural resources	number	103	92	2	3	65	31	51	31	12	54	21	63	30	12	23
Cultural																
Potentially affected historic cultural resources[4/]	number	37	50	5	3	15	11	5	7	23	60	39	61	40	23	10
Wildlife																
Designated big game winter range affected (operations)	acres	78	59	5	5	–	–	–	–	28	2	2	5	5	116	135
Raptor nests within 1 mile	number	138	135	2	2	56	69	28	40	15	607	570	615	578	21	24
Sage-Grouse Habitat affected (operations)	acres	239	210	6	9	84	38	24	13	54	39	43	41	45	61	90

Table 2.8-7. Alternatives 9A, 9B, 9C, 9D, 9E (Revised), 9F, 9G, and 9H Compared to the Preferred and Proposed Route (continued)

Comparison Features	Unit	BLM Preferred Segment 9 Total Length	Proposed Segment 9 Total Length	Proposed Comparison Portion for Alt. 9A / Alt. 9A		Proposed Comparison Portion for Alt. 9B/ Alt. 9B		Proposed Comparison Portion for Alt. 9C / Alt. 9C		Proposed Comparison Portion for Alts. 9D,F,G,H / Alt. 9D / Alt. 9F / Alt. 9G / Alt. 9H					Proposed Comparison Portion for Alt. 9E (revised) / Alt. 9E (revised)	
Vegetation																
Forest/woodland vegetation removed (construction)	acres	2	2	–	–	2	–	2	–	–	2	–	2	–	–	–
Wetland/Riparian disturbance (construction)	acres	3.4	6.0	t[5/]	0.3	0.4	0.6	0.3	–	5.1	2.6	6.7	4.0	7.3	5.1	2.5
Water/Fish																
Waterbody crossings	number	288	318	16	13	70	57	27	21	135	42	57	35	50	135	105
Temperature- or sediment-impaired stream crossings	number	47	20	–	1	13	8	–	2	1	5	6	5	6	–	27
Soils/Minerals																
Highly erodible soils impacted (High K factor, construction)	acres	1,935	1,588	86	68	885	700	291	225	273	692	699	692	692	362	709
Mineral area (construction)	acres	91	8	–	–	t[5/]	3	t[5/]	1	1	2	2	2	2	<1	84
Land Use/Recreation																
BLM or Forest Service Plan Amendment would be required	Yes/ No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No
Residences within 300 feet of the centerline	number	2	8	–	–	–	1	–	1	6	–	2	–	2	6	–
Residences within 1,000 feet of centerline	number	10	19	–	2	–	7	–	5	9	–	6	–	6	9	–
Agriculture																
Dryland farming impacted (operations)	acres	–	t[5/]	–	–	–	t[5/]	–	–	–	–	–	–	–	–	–
Irrigated agriculture impacted (operations)	acres	22	34	–	1	<1	12	–	4	13	2	7	3	8	13	1

1/ Mileages rounded to the nearest tenth of a mile; rows may not sum exactly.
2/ Acreages rounded to the nearest acre; rows may not sum exactly.
3/ WWE = West-wide Energy
4/ Includes trails
5/ Value is less than 0.1 acre

2.9 CUMULATIVE EFFECTS SUMMARY

2.9.1 Proposed Project

The effects of the proposed Project, when taken together with past, present, and reasonably foreseeable future actions, constitute the cumulative effects of the Project and are fully analyzed in Chapter 4. This analysis assumes the Project would be constructed but examines both the Proponents' Proposed Route and Route Alternatives considered in the EIS for each segment where appropriate. Chapter 4 also discusses the cumulative effects of land use plan amendments needed to allow for the Proposed or Alternative Routes when the amendment would change one or more land classifications. For many resources, the effects of Gateway West, when combined with the effects of other known projects, would not be cumulatively substantial. In other cases, although the effects of Gateway West would be minor, when taken together with effects of other past, present, and proposed future actions, many of which collectively already present a substantial cumulative effect, the cumulative impact may be considerable. Finally, there are some effects of Gateway West that would by themselves be large and, when considered with other effects, also be cumulatively substantial.

Resources for which Gateway West effects would be minor and, even when considered together with other projects, would remain less than cumulatively substantial include socioeconomics, environmental justice, weeds, wetlands, federally listed invertebrate species, lynx, wolf, yellow-billed cuckoo, bald eagle, minerals, paleontological resources, geologic hazards, transportation, air quality, electrical environment, public safety, and noise. Additional details are found in Chapter 4.

Gateway West, by itself, would have minor effects on vegetation, soils, and waterbodies where crossed by access roads and therefore on habitat for most wildlife and fish species, including specifically sagebrush-obligate species (white- and black-tailed prairie dogs, pygmy rabbits, greater sage-grouse, Wyoming pocket gopher, and burrowing owl), riparian-obligate species (Columbia spotted frog, northern leopard frog, and Preble's meadow jumping mouse), and others (e.g., northern goshawk; see Section 3.11 for a comprehensive list). However, even without Gateway West's effects, the loss of habitat and fragmentation from past and present events alone would be considerable. When the Gateway West effects are taken together with historic and present events and projects as well as with multiple future projects, the level of soil and habitat loss and fragmentation continues to be considerable. The Proponents have offered off-site compensatory mitigation for sage-grouse habitat and for wetlands to offset the contribution that Gateway West may make to that loss. The Agencies have required additional mitigation and are considering further mitigation for habitat losses from the Project as detailed in Chapter 3.

Gateway West would not have a measurable adverse effect on non-special status migratory bird populations or significant bird conservation sites, though it would impact some individuals. It would also have an adverse effect on migratory bird habitats and ecological conditions through vegetation removal, fragmentation of native habitats, and possible increases in predation pressure due to adding perching substrate for avian predators and adding service roads sometimes used by predators. When taken together with the extensive habitat loss caused by past, present, and reasonably

foreseeable actions, the cumulative impact on migratory bird habitat and ecological conditions would be substantial. The BLM will continue to discuss mitigation with the Proponents as part of the preparation for the issuance of the ROD.

Gateway West, by itself, would have minor adverse effects to private land uses or to agriculture with the degree of impact varying by alternative. When taken together with many of the factors that constrain and limit agriculture, including availability of irrigation water and development pressure on property values, additional land withdrawals for utility uses can be very important to individual farmers and to agricultural communities. On federal lands, both the Proposed Route and some alternatives would require changes in existing land use plans. In particular, visual resource or scenic management objectives would not be met if some of the proposed or alternative routes were chosen, and existing specifications for allowable levels of visual contrast would have to be altered. Also, several land management plans would require amendments to allow the Project. In some cases, large areas of public lands would be reclassified, possibly allowing for additional projects without additional plan amendments. These impacts to land use planning goals would be considerable, particularly when taken together with other transmission lines requesting similar consideration, which if granted along the same route would create a large utility corridor.

Any new water withdrawals in the watersheds of the Platte and Colorado Rivers (Segments 1 to 4 in Wyoming) would require either participation in the recovery programs for those rivers (provided for in programmatic biological opinions for each) or a separate consultation with the USFWS. Gateway West and all new proposed construction projects in those watersheds in Wyoming would require some water during construction and would be subject to concerns regarding withdrawals. BLM would participate in the USFWS recovery program and would require the Proponents to pay the assigned fee for water uses during construction. Any new withdrawals from either river are considered a significant adverse impact on warm-water fisheries and associated endangered fish species as well as riparian-obligate species of plants. However, participation in the recovery program relieves the Project of a jeopardy decision.

Gateway West, by itself, would have significant adverse effects on some cultural resources, particularly on historic properties for which visual setting is important like historic trails. When considered together with other past, present, and foreseeable future projects, including additional transmission lines, the cumulative effect is also significant. Similarly, the visual impact of the Gateway West set of lattice towers in some areas would be a substantial negative effect, and when taken together with the several proposed transmission lines and other developments, would form a cumulatively considerable adverse impact.

2.9.2 No Action

Under the No Action Alternative, the BLM would not issue a ROW grant to the Proponents of Gateway West and the Project would not be constructed across federal lands. No land management plans would be amended to allow for the construction of this Project. Other projects would continue, including wind farms, oil and gas extraction, and coal, trona, phosphate mines. The demand for electricity, especially for renewable energy, would continue to grow in the Proponents' service territories. If Gateway West

is not permitted, the demand for transmission services identified by the Proponents would not be met through this Project and the area would have to turn to other proposals to meet the transmission demand. According to McBride et al. (2008), the lack of construction of transmission lines could result in substantial adverse impacts on the economic growth, including loss of jobs, in the Pacific Northwest region, which includes Idaho as well as Washington, Oregon, Montana, and several Canadian provinces.

2.10 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

In accordance with NEPA Section 102.C (42 U.S.C. § 4332), this section addresses irreversible and irretrievable commitments of resources that would result from the implementation of the Proposed Action and unavoidable adverse impacts. The relationship between local short-term uses of the environment within the region of influence and the maintenance and enhancement of long-term productivity is discussed in detail for each resource in Chapter 3.

Resources committed to the proposed Project would be material and nonmaterial. Irreversible commitment of resources for the purposes of this section has been interpreted to mean that those resources, once committed to the proposed Project, would continue to be committed throughout the 50-year life of the Project. Irretrievable commitment of resources has been interpreted to mean that those resources used, consumed, destroyed, or degraded during construction, operation, maintenance, and abandonment of the proposed Project could not be retrieved or replaced for the life of the Project or beyond.

Implementation of the Proposed Route would require the consumption of nonrenewable fuel (diesel, gasoline, and jet fuel) resources for construction vehicles, construction equipment, construction operation vehicles, and helicopter use. Construction of the Project would result in the consumption of saleable minerals, including fill material for grade changes, sand and gravel for concrete production, gravel for road beds, and similar uses resulting in an irretrievable commitment of natural resources. Construction would also require the manufacture of new materials, some of which would not be recyclable at the end of the Proposed Route's lifetime, and energy for the production of these materials, which would also result in an irretrievable commitment of natural resources. Table 2.10-1 details the irreversible and irretrievable commitments by resource and indicates in which section of Chapter 3 the resource is discussed.

Table 2.10-1. Irreversible and Irretrievable Commitments of Resources, Gateway West Project

Section	Resource	Irreversible Impacts	Irretrievable Impacts	Explanation
3.2	Visual Resources	No	Yes	Impacts to viewers during the life of the Project would be irretrievable. Visual impacts would end with the end of the Project and would not be irreversible. Recovery in forested areas would require more time than in shrub or grass lands.
3.3	Cultural Resources	Yes	Yes	Removal or disturbance of previously unidentified cultural resources and for any known sites mitigated by excavation would result in irretrievable and irreversible loss of data. Visual impacts would end with the decommissioning of the Project but visual setting would be compromised in some cases for the duration of the Project.
3.4	Socioeconomic	No	No	Construction impacts to worker availability would be short-term and substitutable with other worker populations.
3.5	Environmental Justice	No	No	No impacts from the Project would occur.
3.6	Vegetation	Yes	Yes	Removal or disturbance of vegetation, such as conversion of forest habitat to grassland and shrubland, could create irreversible and irretrievable impacts.
3.7	Rare Plants	Yes	Yes	Removal or disturbance of habitat could create irreversible and irretrievable impacts. Aquatic habitat could be irreversibly affected.
3.8	Invasive Plant Species	No	Yes	Invasive plant species could be introduced by the Project irretrievably resulting in loss of native vegetation.
3.9	Wetlands	Yes	Yes	Removal or disturbance of habitat, such as filling of wetlands to create roads, could create irreversible and irretrievable impacts. Aquatic habitat could be irreversibly affected by road construction across streams.
3.10	Wildlife and Fish	Yes	Yes	
3.11	TES Wildlife and Fish	Yes	Yes	
3.12	Minerals	No	Yes	Construction would result in the consumption of saleable minerals, including fill materials for grade changes, sand and gravel for concrete production, and gravel for road beds.
3.13	Paleontology	Yes	Yes	Some loss of fossil resources may occur during construction of the Project resulting in irretrievable and irreversible loss of data.
3.14	Geologic Hazards	No	No	No irretrievable or irreversible losses would occur due to geologic hazards.
3.15	Soils	Yes	Yes	Soil lost to increased erosion would be irretrievable. There would be an irreversible commitment of soil resources on land associated with the ROW and aboveground facilities.

Table 2.10-1. Irreversible and Irretrievable Commitments of Resources, Gateway West Project (continued)

Section	Resource	Irreversible Impacts	Irretrievable Impacts	Explanation
3.16	Water Resources	No	Yes	Water quality degradation from increased sedimentation would be irretrievable. Water removed from streams for construction would be irretrievable. There would be no irreversible commitment of water resources.
3.17	Land Use	No	Yes	Land use required for the operation of the transmission line would be irretrievably altered for the life of the Project.
3.18	Agriculture	No	Yes	Irretrievable impacts would include the loss of agricultural crop production for the season during construction in impacted areas. Yearly crop and forage production would decrease due to towers, structures, access roads, etc., on cropland. There would be an irretrievable loss of crop and forage production due to tower presence for the life of the Project.
3.19	Transportation	No	No	Project impacts would occur only during construction and would be fully mitigated.
3.20	Air	No	No	Project emissions would not exceed federal or state air quality standards. Air quality would return to existing conditions after completion of the Project.
3.21	Electrical Environment	No	No	Project electrical and magnetic fields would not exceed federal or state standards. Effects would end with termination of the Project.
3.22	Public Safety	No	No	Temporary impacts to public safety during construction are fully mitigated. No irretrievable or irreversible impacts would occur.
3.23	Noise	No	No	Construction noise is short-term. Project operational noise would not exceed federal or state standards. Effects would end with termination of the Project.