2.0 ALTERNATIVES

This chapter includes information on how alternatives were developed, describes the alternatives that are evaluated in the EIS, describes alternatives that were considered but not given detailed study and preferred alternatives, details system components common to all Action Alternatives, compares the key features and effects of the alternatives studied, and describes conformance with BLM and Forest Service land use plans.

Appendix A contains the figures referenced herein. Appendix B details the components common to all Action Alternatives, including construction and operation.

2.1 OVERALL PROJECT

As explained in the Purpose and Need section of Chapter 1, this Project was developed to meet the needs of the Proponents. The BLM, as lead agency for NEPA, is responsible for the environmental analysis of the Project. The analysis, in turn, will disclose the impacts of the Proposed Action, No Action, and a range of reasonable Action Alternatives, as well as supply the decision makers, including the BLM, the Forest Service, the BIA, and USACE, with information pertinent to deciding whether to issue a ROW grant and Special Use Permit, Rivers and Harbors Act Section 10 permit, and CWA Section 404 permit, respectively, and if so, under what conditions. This analysis may also be used by state and local governmental agencies to advise their decision-making processes.

As proposed, the Gateway West Project is composed of 10 segments of high-voltage transmission lines that would run between planned, proposed, or existing substations. These segments start at the existing Windstar Substation close to the Dave Johnston Power Plant near Glenrock, Wyoming, and continue west until reaching the existing Hemingway Substation approximately 30 miles southwest of Boise, Idaho. An overview map of the Project location and facilities is provided in Appendix A, Figure A-1. Figure A-1 shows the Proposed Route (red), feasible alternatives (green), and alternatives considered but eliminated from detailed study (purple). Maps of each segment are shown on Figures A-2 through A-12 in Appendix A. Maps of each existing, planned, or proposed substation are provided in Appendix A as Figures A-13 through A-24. Segments 5, 7, 8, 9, and 10 would be single-circuit 500-kV lines.[1] Segment 1E would be single-circuit 230-kV line and Segments 1W(a) and 1W(c) would consist of a new 230-kV line for part of their length and a reconstruction of an existing 230-kV line for the remaining part. Segment 6 would use an existing 345-kV line energized to 500 kV. The Project consists of double-circuit 500-kV structures for Segments 2 through 4 with one circuit initially operated at 230 kV.[2] The Proponents have also identified three

[1] A single-circuit transmission line (whether 230-kV or 500-kV) is composed of three electrical phases and two lightning protection shield wires. One of the lighting protection shield wires is a steel overhead ground wire (OHGW), and the other is typically a fiber optic shield ground wire (OPGW). The OPGW contains glass fibers used for communication along the fiber path for data transfer between the Proponents' facilities. The data transferred are required for system control and monitoring.

[2] A double-circuit 500-kV transmission line is composed of six electrical phases (two independent circuits of three phases each) and two lightning protection shield wires. One of the lighting protection shield wires is a steel OHGW, and the other is an OPGW. The OPGW contains glass fibers used for communication along the fiber path for data transfer between the Proponents' facilities. The data transferred are required for system control and monitoring.

variations to the overall Project for detailed analysis: 1) a ROW Design Variation for Segments 2, 3, and 4 using two single circuits in place of the single double circuit, 2) a Structure Variation in which guyed rather than self-supporting lattice structures would be used for some in-line (tangent) areas without land use or wildlife conflicts, and 3) a Schedule Variation that would entail two single circuits for Segments 2, 3, and 4 as well as phased construction over a longer time frame. If the Project is approved, the Proponents would select among the Proposed Action and the three variations based on economic conditions prior to construction. The Design, Structure, and Schedule Variations are described in Sections 2.1.2 through 2.1.4 and evaluated in Chapter 3. BLM could approve options on federally managed lands from which the Proponents could choose.

2.1.1 Proposed Action

The Project starts in Wyoming at the Windstar Substation and takes two paths to the Aeolus Substation—one that swings to the east (Segment 1E) and one (Segment 1W) that for the most part follows or parallels the WWE corridor and an existing 230-kV line (proposed for reconstruction as Segment 1W[c]). It then proceeds as a double-circuit 500-kV line from Aeolus to Populus (though in Segments 2 and 3 with one of the circuits initially energized at 230 kV between the Aeolus and Anticline Substations). At Populus, the Gateway West Project splits into two single-circuit 500-kV roughly parallel paths. Segments 5, 6, and 8 travel on a more northerly route toward the Hemingway Substation through the Borah and Midpoint Substations, while Segments 7 and 9 travel 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 loads along the way and also to increase reliability.

The transmission line segments would cross federal, state, and private lands. Table 2.1-1 summarizes miles crossed by ownership for the Proposed Action. The total

Table 2.1-1. Proposed Action 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 1E – Windstar to Aeolus	11.6	2.8	22.0	64.0	0.1	100.6	11.5	2.8	21.9	63.7	0.1
Segment 1W(a) – Windstar to Aeolus	26.6	2.3	18.5	29.1	–	76.5	34.7	3.0	24.2	38.0	
Segment 1W(c) – Dave Johnston to Aeolus	24.2	2.3	15.4	28.7	0.1	70.6	34.2	3.3	21.8	40.6	0.1
Segment 2 – Aeolus to Creston	36.9	–	6.2	53.5	0.1	96.7	38.2	–	6.4	55.3	0.1
Segment 3 – Creston to Anticline[3/]	29.0	–	1.0	26.5	–	56.5	51.3	–	1.8	46.9	–
Segment 4 – Anticline to Populus	82.2	9.2	10.7	97.7	3.2	203.0	40.5	4.5	5.3	48.1	1.6
Segment 5 – Populus to Borah	13.2	–	3.5	37.8	0.1	54.6	24.2	–	6.4	69.2	0.2
Segment 6 – Borah to Midpoint[4/]	–	–		0.5	–	0.5		–		100.0	–
Segment 7 – Populus to Cedar Hill	28.1	–	4.3	85.7	–	118.1	23.8	–	3.6	72.6	–
Segment 8 – Midpoint to Hemingway	86.5	–	9.3	33.4	1.8	131.0	66.0	–	6.9	25.5	1.6
Segment 9 – Cedar Hill to Hemingway	128.7	–	4.6	28.4	–	161.7	79.6	–	2.8	17.6	–
Segment 10 – Midpoint to Cedar Hill	13.1	–	–	20.3	0.1	33.6	39.2	–	–	60.6	0.3
Total Project[5/]	480.5	16.7	95.2	506.7	5.7	1,103.4	43.5	1.5	8.6	45.9	0.5

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 3 includes 5.5 miles of 345-kV and 4.3 miles of 230-kV single circuit line.
4/ Segment 6 does not include ground-disturbing activity except in association with the expanded Borah and Midpoint Substations.
5/ Totals may not equal 100 percent due to rounding.

length of all segments requiring new transmission line construction is approximately 1,103 miles. The ROW width requested for the transmission line ranges from 125 feet for single-circuit 230-kV segments, 250 feet for single-circuit 500-kV segments, and 300 feet for double-circuit 500-kV segments.

Facilities to be evaluated are as follows:

- Ten transmission line segments, including access roads, material laydown and staging areas, and other temporary construction ground disturbances;
- Three proposed substations, expansion at one planned substation to be constructed for other purposes, and expansion at eight existing substations; and
- Other associated facilities including communication systems, optical fiber regeneration stations, and substation distribution supply lines.

Details of construction and operations, common to all alternatives, are summarized in Section 2.7 and detailed in Appendix B. Environmental protection measures (EPMs), framework reclamation plan, plant and wildlife conservation measures and operations, maintenance, and emergency response measures proposed by the Proponents are briefly summarized in Section 2.7 and discussed in detail in Appendix C and are considered part of the Project description for the Proposed Route and Route Alternatives and Design, Structural, and Schedule Variations. Table 2.1-2 illustrates and summarizes the Proposed Action. Table 2.1-3 shows the construction schedule for the Proposed Action.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations

Project Facility	Description
Transmission Line Segments	
Transmission Line Features Common to All Proposed 500-kV Segments	• Three-phase 500-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. • One overhead fiber optic shield ground wire (OPGW) containing 48 fibers. • One OPGW wire diameter: 0.637 inch. • One extra high strength (EHS) steel overhead ground wire. • Steel overhead ground wire diameter: approximately 0.495 inch. • Typical ground clearance: 35 feet. • Structure types: lattice steel single- and double-circuit structures. Dulled galvanized steel finish. • Structure heights: Single-circuit structure varies between 145 and 180 feet. Average height of 156 feet. • Structure heights: Double-circuit structure varies between 160 and 190 feet. Average height of 170 feet. • Approximate distance between structures: 1,200 to 1,300 feet. • ROW width for double-circuit: 300 feet. • ROW width for single-circuit: 250 feet. • The exact quantity, distance between, and placement of the structures would 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 Common to All Proposed 230-kV Segments	• Three-phase 230-kV construction for all structure designs, conductor spacing and clearances[1]. • Conductors: Bundled 1272 kcmil 45/7 ACSR "Bittern," with two subconductors per phase. Non-specular finish. • Estimated subconductor diameter: 1.196 inches. • Bundle spacing: 18 inches vertical. • One OPGW containing 48 fibers where communication is required. • One OPGW wire diameter: 0.637 inch. • 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. • Typical ground clearance: 28 feet. • Structure types: steel H-frame structures. • Above-ground structure heights: varies between 60 and 90 feet. • Approximate distance between structures: 700 feet. • ROW width: 125 feet. • The exact quantity, distance between and placement of the structures would 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 for Proposed Action and Design and Schedule Variations (continued)

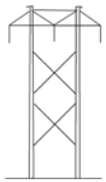
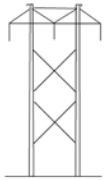
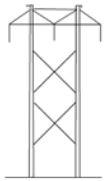
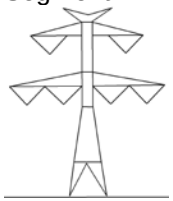
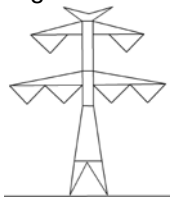
Project Facility	Description
Segment 1E – Windstar to Aeolus 	• Single circuit 230-kV transmission line in one ROW. • Single circuit H-frame steel structures. • Approximate number of structures: 732. • Line length: Approximately 100.6 miles. • No OPGW regeneration sites. • See Figure A-2.
Segment 1W(a) – Windstar to Aeolus 	• Single circuit 230-kV transmission line in one ROW. • Single circuit H-frame steel structures. • Approximate number of structures: 588. • Line length: Approximately 76.5 miles. • One OPGW regeneration site. • See Figure A-2.
Segment 1W(c) – Dave Johnston to Aeolus 	• Existing single circuit 230-kV transmission line to be re-constructed with single circuit H-frame steel structures. • Approximate number of structures to be replaced: 531. • Line length: Approximately 70.6 miles. • No OPGW regeneration sites. • See Figure A-2.
Segment 2 – Aeolus to Creston 	• Double-circuit 500-kV transmission line in one ROW initially energized to 230 kV on one side and 500-kV on the other side. • Double-circuit lattice steel structures. • Approximate number of structures: 414. • Line length: Approximately 96.7 miles. • One OPGW regeneration site. • See Figure A-3.
Segment 3 – Creston to Anticline 	• Double-circuit 500-kV transmission line in one ROW initially energized to 230-kV on one side and 500-kV on the other side. • Double-circuit lattice steel structures. • Approximate number of structures: 199. • Line length: Approximately 46.6 miles. • No OPGW regeneration sites. • See Figure A-4.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

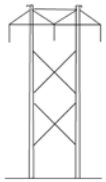
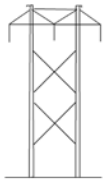
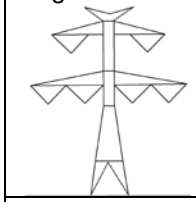
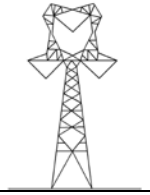
Project Facility	Description
Segment 3A – Anticline to Bridger 345-kV Yard 	• Single-circuit 345-kV transmission line in one ROW. • Single-circuit H-Frame steel structures. • Approximate number of structures: 25. • Line length: Approximately 5.5 miles. • No OPGW regeneration sites. • See Figure A-4.
Segment 3B – Anticline to Bridger 230-kV Yard 	• Single circuit 230-kV transmission line in one ROW. • Single circuit H-frame steel structures. • Approximate number of structures: 29. • Line length: Approximately 4.3 miles. • No OPGW regeneration sites. • See Figure A-4.
Segment 4 – Anticline to Populus 	• Double-circuit 500-kV transmission line in one ROW with both circuits energized at 500-kV. • Double-circuit lattice steel structures. • Approximate number of structures: 893. • Line length: Approximately 203.0 miles. • Three OPGW regeneration sites. • See Figures A-5 and A-6.
Segment 5 – Populus to Borah 	• Single-circuit 500-kV transmission line in one ROW. • Single-circuit lattice steel structures. • Approximate number of structures: 245. • Line length: Approximately 54.6 miles. • No OPGW regeneration sites. • See Figure A-7.
Segment 6 – Borah to Midpoint	• Re-energize existing 345-kV system to 500-kV (this line segment was previously constructed to 500-kV standards). • Single-circuit lattice steel structures. • 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.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

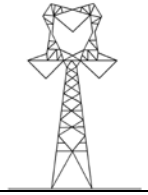
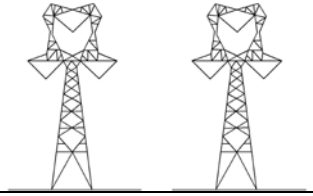
Project Facility	Description
Segment 7 – Populus to Cedar Hill	• Single-circuit 500-kV transmission line in one ROW. • Single-circuit lattice steel structures. • Approximate number of structures: 534. • Line length: Approximately 118.1 miles. • Two OPGW regeneration sites. • See Figure A-9.
Segment 8 – Midpoint to Hemingway 	• Single-circuit 500-kV transmission line in one ROW. • Single-circuit lattice steel structures. • Approximate number of structures: 577. • Line length: Approximately 131.0 miles. • Two OPGW regeneration sites. • See Figure A-10.
Segment 9 – Cedar Hill to Hemingway	• Single-circuit 500-kV transmission line in one ROW. • Single-circuit lattice steel structures. • Approximate number of structures: 707. • Line length: Approximately 161.7 miles. • Two OPGW regeneration sites. • See Figure A-11.
Segment 10 – Midpoint to Cedar Hill	• Single-circuit 500-kV transmission line in one ROW. • Single-circuit lattice steel structures. • Approximate number of structures: 155. • Line length: Approximately 33.6 miles. • No OPGW regeneration sites. • See Figure A-12.
Segments 2, 3, and 4 – Design and Schedule Variation 	• Single-circuit 500-kV transmission lines in one ROW. • Two single-circuit lattice steel structures. • Approximate number of structures: Segment 2—828, Segment 3—398, Segment 4—1,786. • Line length: same as for double-circuit 500-kV structure. • Four OPGW regeneration sites: same as for double-circuit 500-kV structure.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

Project Facility	Description
Substation Facilities	
Windstar Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area of the 230-kV substation by approximately 10 acres. • Existing access road is gravel and would 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. • Addition of new control building within the substation fenced area. • See Figure A-18.
Heward Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 3 acres. • 230-kV circuit breakers and related switching equipment, bus, and support structures. • 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-19.
Aeolus Substation	• Expansion of planned substation. • Developed acreage: increase the fenced area by approximately 90 acres. • Expansion of the Aeolus Substation will require upgrading County Route 121. This upgrade will result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway. • 500-kV and 230-kV circuit breakers and related switching equipment, bus and support structures, 500/230-kV transformer bank, 500-kV shunt reactor bank on bus and on Anticline line, 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. • New control buildings for the 230-kV and 500-kV substation yards. • New Static Var Compensator that will occupy about 10 to 15 acres in the substation fenced area and will be housed in a building that contains power electronic equipment and associated cooling equipment. • See Figure A-17.
Creston Substation	• Proposed new substation. • Developed acreage: Approximately 13 acres fenced with access road. • A gravel access road of approximately 500 feet long would connect to an existing road. • 230-kV circuit breakers and related switching equipment.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

Project Facility	Description
Substation Facilities	
Creston Substation (cont'd)	• Bus and support structures. • Potential and current transformers. • 230-kV line termination structures approx. 70 feet in height. • Control, protection, and communications equipment. • Addition of new control building within the substation fenced area. • See Figure A-13.
Jim Bridger 230-kV Substation	• Expansion of existing substation. • Existing access road is adequate. • Additions to existing Jim Bridger 230-kV substations, 230-kV breakers, bus equipment, and line termination structures. • Jim Bridger 230-kV Substation modification to be accomplished within existing station. • See Figure A-15.
Jim Bridger 345-kV Substation	• Expansion of existing substation. • Existing access road is adequate. • Expansion of 345-kV yard by 10 acres. • Additions to Jim Bridger 345-kV yard, including 345-kV breakers, bus equipment, and line termination structures. • Development of a new 345-kV transmission line termination structure approximately 100 feet in height to connect with the proposed line to Anticline Substation.
Anticline Substation	• Proposed substation. • Developed acreage: Approximately 125 acres fenced with an improved access road. • To access the new 500-kV yard, an existing dirt road about a mile long will be improved with construction of an all-weather surface with improved access approaches, main highway entrance, and Union Pacific Railroad (UPRR) crossing arrangements. • Bus and support structures, 500/345-kV transformer bank, 345-kV phase shifting transformer, 500-kV shunt reactor bank on bus and on the Aeolus and Populus lines, 500-kV series capacitor bank added to Aeolus line, and 500-kV shunt capacitor banks. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment. • New control building. • See Figure A-14.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

Project Facility	Description
Substation Facilities	
Populus Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 80 acres. • Existing access road is adequate • 500/345-kV transformer bank. • 500-kV and 345-kV circuit breakers and related switching equipment. • Bus and support structures. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment. • Control building. • 500-kV series capacitor bank added to Anticline line. • 500-kV Shunt reactor banks added to the Anticline, Cedar Hills, and Borah lines. • See Figure A-20.
Borah Substation	• Expansion of existing substation. • Developed acreage: increase the fenced area by approximately 35 acres. • Existing access road is gravel and will not need extension. • 500-kV circuit breakers and related switching equipment. • Bus and support structures. • 500-kV line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added inside the existing control building. • 500-kV series capacitor bank added to Populus line. • 500-kV shunt reactor bank added to the Midpoint line. • 1000MVA 500/230-kV transformer bank. • Up to 5 single circuit 500-kV structure relocations required on existing line from Midpoint Substation. • See Figure A-21.
Cedar Hill Substation	• Proposed substation. • Developed acreage: approximately 45 acres fenced with access road. • 500-kV circuit breakers and related switching equipment. • Adjacent existing road is gravel and will not need extension. • Bus and support structures. • 500-kV line termination structures approximately 135 feet in height. • 500-kV shunt reactors added to Populus and Hemingway lines. • 500-kV series capacitor bank added to the Populus line. • Control, protection, and communications equipment added to new control building. • Up to 5 single circuit 500-kV structure relocations required on existing line from Borah Substation. • See Figure A-16.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

Project Facility	Description
Substation Facilities	
Midpoint Substation	• Expansion of existing substation. • 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 line termination structures approximately 135 feet in height. • Control, protection, and communications equipment added to existing control building. • 500-kV series capacitor bank and shunt reactor bank added to Borah line. • 500-kV shunt reactor bank added to the Hemingway line. • See Figure A-22.
Hemingway Substation	• Expansion of existing substation. • 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 will 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 line termination structures approximately 135 feet in height. • Potential and current transformers. • Control, protection, and communications equipment added to the existing control building. • 500-kV shunt reactors added to each line. • 500-kV series capacitor bank added to each line. • See Figure A-23.
Ancillary Facilities	
Communications and Control Facilities – Fiber Optic Cable Regeneration Sites	• Regeneration sites are required to amplify the system control and monitoring signals carried over the fiber optic cable attached to the transmission towers. • A total of up to 11 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 would be 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 would be within a 75- X 75-foot fenced area. • Typical building dimensions within the fenced area would be 12 feet wide X 32 feet long X 9 feet tall. • The fiber OPGW cable supported on the transmission structures would be 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, would be located inside the building.

Table 2.1-2. Summary of Project Facilities for Proposed Action and Design and Schedule Variations (continued)

Project Facility	Description
Ancillary Facilities	
Communications and Control Facilities – Fiber Optic Cable Regeneration Sites (cont'd)	• At sites not within a substation, a liquid propane fueled emergency generator would 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 would be: 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 11 regeneration sites (locations to be determined during final design) o Creston Substation (500 feet across BLM-managed land) o Anticline 500-kV Substation (3.3 miles across private land) o Cedar Hill Substation (less than 200 feet across private land). • Typically provided from an existing distribution line located in proximity to the site. • Not required for expansions at Windstar, Heward, Jim Bridger, Populus, Borah, Midpoint, and Hemingway Substations since these substations exist or are currently planned and will exist at the time of the Gateway West construction.

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		Primarily Idaho			
		Phase 1		Phase 1		Phase 2	
		Start June 2013	End Dec 2018	Start Mar 2013	End Dec 2018	Start May 2015	End Dec 2018
	Windstar Substation	Windstar Expansion					
	Heward Substation	Heward Substation					
	Aeolus Substation	Aeolus Expansion					
	Creston Substation	Creston Substation					
	Populus Substation	Populus Expansion					
	Anticline Substation	Anticline (Includes 230-kV and 345-kV bays at existing Jim Bridger Substation)					
1E	Windstar – Aeolus #2	Single-Circuit 230-kV					
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 and build a short section a new single-circuit 230 kV line					
2	Aeolus – Creston	Double-Circuit 500-kV [1/]					
3	Creston – Anticline	Double-Circuit 500-kV [1/]					
3A	Anticline – Jim Bridger 345-kV Substation	Single-Circuit 345-kV					
3B	Jim Bridger 230-kV Substation [2/]	Single-Circuit 230-kV					
4	Anticline – Populus	Double-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					Borah Expansion	
	Midpoint Substation					Midpoint Expansion	
	Hemingway Substation					Hemingway Expansion	
5	Populus – Borah					Single-Circuit 500-kV	
6	Borah – Midpoint [3/]					Existing single-circuit	
8	Midpoint – Hemingway					Single-Circuit 500-kV	

1/ Constructed to 500-kV standards but one circuit initially operated at 230 kV and the other at 500 kV.
2/ Termination for Creston – Anticline circuit when initially operated at 230 kV.
3/ Existing single circuit constructed to 500-kV standards (energized from 345 kV to 500 kV).

2.1.2 Design Variation

After analysis and comparison with the alternative structure types considered, the double-circuit 500-kV delta lattice tower has been proposed for those line segments requiring a double-circuit configuration (Segments 2, 3, and 4). However, two single-circuit 500-kV structures in a ROW expanded to 350-foot width (as opposed to the standard 300-foot width of the proposed single-tower, double-circuit structure) are also an economically feasible structure alternative for Segments 2, 3, and 4 that require two 500-kV circuits. Initially, one circuit would be operated at 230 kV. Table 2.1-4 shows the construction schedule for the Design Variation.

The alternative of two single-circuit lines in place of one double-circuit line presents some potential advantages for construction schedule, maintainability, and operational availability. For example, as opposed to the heavier double-circuit tower, the lower structure weight and configuration of the single-circuit structure would allow helicopter-aided construction techniques, providing the Proponents with the option of taking less time to construct. Separating the two 500-kV circuits onto two separate structures would allow energized maintenance procedures to proceed more easily than when both circuits are on the same structure. During a structure failure event, if a double-circuit tower fails, both circuits would be out of service. With two single-circuit lines, it is less likely that both circuits would be affected to the same degree during the same event. Thus, the two single-circuit structure alternative would have a higher operational availability during a tower failure event. However, in the isolated situation where spans between structures would exceed 1,800 feet as compared to the average span of 1,200 to 1,300 feet, a parallel circuit separation distance of greater than 175 feet would be required for protection in the unlikely event of towers tipping into the adjacent line because tower heights would need to be increased to allow for greater span lengths. Longitudinal offsets of tall towers may also be required.

Table 2.1-4. Design Variation Construction Schedule

Segment Number	Segment or Substation Name	Primarily Wyoming		Primarily Idaho			
		Phase 1		Phase 1		Phase 2	
		Start June 2013	End Dec 2018	Start Mar 2013	End Dec 2018	Start May 2015	End Dec 2018
	Windstar Substation	Windstar Expansion					
	Heward Substation	Heward Substation					
	Aeolus Substation	Aeolus Expansion					
	Creston Substation	Creston Substation					
	Populus Substation	Populus Expansion					
3A	Anticline – Jim Bridger 345-kV Yard	Single-Circuit 345-kV					
	Anticline Substation	Anticline (Includes 230-kV and 345-kV bays bay at existing Jim Bridger Substation)					
1E	Windstar – Aeolus #2	Single-Circuit 230-kV					
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 line and build a short section of new single-circuit 230-kV line					
2	Aeolus – Creston	Two 500-kV Single Circuits 1/					
3	Creston – Anticline	Two 500-kV Single Circuits 1/					
3A	Anticline – Jim Bridger 345-kV Substation	Single-Circuit 345-kV					
3B	Jim Bridger 230-kV Substation 2/	Single-Circuit 230-kV					
4	Anticline – Populus	Two 500-kV Single Circuits					
	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					Borah Expansion	
	Midpoint Substation					Midpoint Expansion	
	Hemingway Substation					Hemingway Expansion	
5	Populus –Borah					Single-Circuit 500-kV	
6	Borah – Midpoint 3/					Existing Single-Circuit	
8	Midpoint - Hemingway					Single-Circuit 500-kV	

1/ Constructed to 500-kV standards but one circuit initially operated at 230 kV and the other at 500 kV.
2/ Termination for Creston – Anticline circuit when initially operated at 230 kV.
3/ Existing single circuit constructed to 500-kV standards (energized from 345 kV to 500 kV).

The Proponents wish to consider this variation and have requested that it be considered in the detailed study for Segments 2, 3, and 4.

Appendix B, Figure B-5 illustrates the two single-circuit ROW configuration compared to the proposed double-circuit ROW configuration. Table 2.1-5 compares the double-circuit and two single-circuit ROW configurations for several factors.

Table 2.1-5. Comparison of One Double-Circuit 500-kV Lattice Tower and Two Single-Circuit 500-kV Lattice Towers

Topic	One Double-Circuit 500-kV Lattice Steel Tower in ROW	Two Single-Circuit 500-kV Lattice Steel Towers in ROW	Comments
Tangent Tower Type	D5A (delta configuration)	S5A (delta configuration)	
Tower Finish	Dull Galvanized	Dull Galvanized	
Height Range	160–190 feet	145–180 feet	
Typical Tower Height	170 feet	156 feet	Double-circuit tower is on average 14 feet taller than single-circuit tower.
Typical Tangent Tower Weight	82,237 pounds	45,660 pounds for one tower 91,320 pounds for two towers	
ROW Width	300 feet	350 feet	
Average Span	Approximately 1,200–1,300 feet	Approximately 1,200–1,300 feet	
Number of towers for Segments 2, 3, and 4	1,506	3,012	
Max Span within ROW	2,650 feet	2,000 feet	
Short Term Ground Disturbance	Temporary disturbance = 300 feet (ROW width) x 250 feet = 75,000 square feet (1.72 acres) per structure	Temporary disturbance = 350 feet (ROW Width) x 250 feet = 87,500 square feet (2.01 acres) per set of structures	The two side-by-side single-circuit ROW configuration results in approximately 1.25 more acres per mile of temporary ground disturbance due to construction.
Long Term Ground Disturbance	Long-term disturbance = 50 feet x 50 feet = 2,500 square feet (0.06 acre)	Long-term disturbance = 50 feet x 50 feet = 2,500 square feet (0.06 acre) x 2 = 0.12 acre	
Actual Footprint	46 feet x 41 feet per tower (1,886 square feet = 0.043 acre)	46 feet x 41 feet per tower (1,886 square feet = 0.043 acre), 0.086 acres per pair of towers	The two side-by-side single-circuit ROW configuration results in twice as much footprint area because there are two towers.
Foundation Sizes	Four 5-foot x 26-foot drilled pier foundations per tower	Four 4-foot x 22-foot drilled pier foundations per tower	
Foundation Volume	75.6 cubic yards per tower	41.0 cubic yards per tower 81.0 cubic yards for two towers	The two side by side single-circuit ROW configuration results in approximately 23.3 more cubic yards per mile of concrete volume for foundations.

Table 2.1-5. Comparison of One Double-Circuit 500-kV Lattice Tower and Two Single-Circuit 500-kV Lattice Towers (continued)

Topic	One Double-Circuit 500-kV Lattice Steel Tower in ROW	Two Single-Circuit 500-kV Lattice Steel Towers in ROW	Comments
Constructability	Cranes only	Cranes and/or helicopter	The potential for helicopter erection allows for shorter construction durations. Access roads would still be required to each tower, but the road would not be as large with helicopter construction.
Maintenance Activities	Live-line maintenance - similar. Helicopter maintenance - similar.		
Estimated Costs	Approximately 5-15% less than two side by side single-circuit towers.	Approximately 5-15% more than one double-circuit tower.	Does not include costs for angle and dead-end structures (i.e. only tangents). The costs shown do not include ROW costs.
Visual Appearance	The lower cross arm of the double-circuit tower is 162 feet wide, making the tower look as wide as it is tall.	The single-circuit tower cross arms are 94 feet wide, but there are two of them.	When visible, the ROW will appear 25-30% wider and more structures will be visible although they will be approximately 14 feet shorter for the two single-circuit design variation.
Raptor Perching	Fewer perching opportunities.	More perching opportunities.	

2.1.3 Structure Variation

In addition to the proposed self-supporting single-circuit steel lattice 500-kV structure, the Proponents wish to consider an alternative single-circuit 500-kV guyed structure for use where terrain, land cover, and land use allow. During final design, the Proponents would identify specific locations where this structure would be proposed for review and approval. Figure B-6 in Appendix B shows the ROW configuration for the guyed “Delta” and guyed “V” structures. Table 2.1-6 compares the self-supporting and guyed “Delta” structures for several factors.

Table 2.1-6. Summary/Comparison of Single-Circuit 500-kV Lattice Towers, Self-Supporting vs. Guyed Towers

Topic	One Single-Circuit Self-Supporting 500-kV Lattice Tower	One Single-Circuit Guyed Delta 500-kV Lattice Tower	One Single-Circuit Guyed-V 500-kV Lattice Tower	Comments
Tangent Tower Type	S5A (delta configuration)	Guyed Delta (delta configuration)	Guyed-V (horizontal configuration)	Delta is the Proponents' preferred electrical configuration.
Tower Finish	Dull Galvanized	Dull Galvanized	Dull Galvanized	
Typical Tower Height	156 feet	156 feet	133 feet	
Typical Tangent Tower Weight	45,660 lbs	29,679 lbs	25,113 lbs	Guyed tower weights are approximated based on experience.
ROW Width [1/]	250 feet			
Average Span [2/]	Approximately 1,200 – 1,300 feet			
Maximum Span within ROW	2,800 feet	2,800 feet	2,400 feet	For the same ROW width, the maximum span is less for guyed-V structures due to the larger spacing between outside phases.
Short-term Ground Disturbance	All short-term ground disturbances associated with construction will be approximately equal for self-supporting and guyed tangent towers.			
Long-term Ground Disturbance	Long-term disturbance = 50 feet x 50 feet = 2,500 sq feet (0.06 acre)	Long-term disturbance = 50 feet x 50 feet = 2,500 sq feet (0.06 acre) Additionally, permanent disturbance at the anchors = 4 x 4 sq feet = 16 sq feet	Long-term disturbance = 50 feet x 50 feet = 2,500 sq feet (0.06 acre) Additionally, permanent disturbance at the anchors = 4 x 4 sq feet = 16 sq feet	A pad with level terrain is necessary at each tower location so that live-line maintenance can be performed on the structures; however, the pad will be revegetated. This is the case for both self-supporting and guyed towers. Long-term disturbances would be approximately equal for self-supporting and guyed structures.
Actual Footprint	46 feet x 41 feet (1886 sq feet = 0.043 ac)	For average tower height, 140 feet x 190 feet = 26,600 sq feet (0.61 ac)	For average tower height, 195 feet x 190 feet = 37,050 sq feet (0.85 ac)	The stated guyed tower footprint encompasses a boundary defined by the 4 anchors and increases with tower height. It should be noted that this is not the actual permanent disturbance boundary.
Foundation Sizes	Four 4-foot x 15-foot drilled pier foundations	3-foot x 2-foot pedestal on top of a 6-foot x 6-foot x 2-foot bearing pad	3-foot x 2-foot pedestal on top of a 6-foot x 6-foot x 2-foot bearing pad	

Table 2.1-6. Summary/Comparison of Single-Circuit 500-kV Lattice Towers, Self Supporting vs. Guyed Towers (continued)

Topic	One Single-Circuit Self-Supporting 500-kV Lattice Tower	One Single-Circuit Guyed Delta 500-kV Lattice Tower	One Single-Circuit Guyed-V 500-kV Lattice Tower	Comments
Foundation Volume	22.0 cubic yds per tower	13.6 cubic yds per tower	13.6 cubic yds per tower	The stated concrete volume for guyed towers assumed that no concrete is required for the anchors (i.e., helical screw or disk type anchors used).
Constructability	Cranes and/or Helicopter			Helicopter construction is more efficient/ effective with lighter guyed towers as they require fewer helicopter picks.
Maintenance Activities	Live-line maintenance - similar. Helicopter maintenance - similar.			
Relative Cost	Highest	Middle (approximately 70-80% of self-supporting installed cost)	Lowest (approx 60-70% of self-supporting installed cost)	Does not include costs for angle and dead-end structures (i.e., only tangents). The costs shown do not include ROW costs.
Visual Appearance	The guyed-V tower is approximately 23 feet shorter than the self-supporting and guyed delta tower, but the cross arm is approximately 36 feet wider. Guyed towers have less visual impact as they contain less steel, and are narrower than self-supporting towers.			
Raptor Perching	There are slightly more perching opportunities in the body of the self-supporting tower than in the mast(s) of the guyed towers. The geometry of the mast(s) provides less space for perching.			
Bird Collisions	Guy structures have higher potential for birds colliding with guys.			

1/ Two single-circuit self-supporting 500-kV lattice towers side by side require a 350-foot ROW. Two “delta” guyed structures side by side require a 375-foot ROW.

2/ The number of structures for each side-by-side configuration would be the same except the guyed “delta” span length is limited beyond 2,400 feet. Therefore, in those limited circumstances, it would require more structures.

Guyed 500-kV single-circuit transmission towers, whether of the “delta” or “V” configuration, would have a single foundation in the center to support the mast(s) and four down guys to support the tower. The delta-type tower has a single mast and the V-type tower has two masts that meet at the single foundation in the center of the tower. The single foundation would be either a pre-cast or poured in place reinforced concrete bearing pad, approximately 6 feet by 6 feet square and 1 to 2 feet deep. Resting on top of the bearing pad would typically be a 3-foot by 2-foot pedestal that supports the bottom of the mast(s).

The bearing pad would be set in an excavation 2 to 4 feet deep depending on the soil at the site. Excavations for the bearing pad foundation would typically be made with a backhoe. In rocky areas, the bearing pad excavation may be completed by drilling and blasting or by installing special rock anchors.

The four guy wires are typically 1 inch in diameter and attached to 15-inch helical screw anchors, "screwed" into the ground with a specially equipped drilling rig, at depths ranging from 10 to 20 feet, depending on soil conditions at the site. Other types of anchors, such as disk anchors, may also be used depending on the soil type encountered at each tower location. For example, rock requires special anchor types.

The guyed tower takes up more operational space than the self-supporting structure due to the guy wires but would generally be accommodated within a 250-foot ROW where only a single circuit is planned. Guy wires may extend outside the ROW on the downhill side on steep slopes to maintain an appropriate slope for the guy. For the Design Variation in which two single circuits would be constructed on the same ROW, the guyed structures would be guyed delta towers and would require a ROW 375 feet wide. The extra ROW would be required only where the structure locations the guy anchors and wires would extend beyond the ROW.

Guyed structures would be used in areas of level to hilly terrain and areas with good anchor conditions. Guyed structures would only be used for "tangent" or in-line structures, not for angles or corners. Guyed structures would be used in rangeland, grassland, and shrub steppe. They would not be used in areas farmed with heavy equipment or using aircraft, in residential areas, within 1 mile of sagebrush habitats occupied by greater sage-grouse within the Kemmerer Field Office (FO), or near airports. In those land use types, self-supporting lattice towers would be used. During the final design phase, the Proponents would identify specific areas where the guyed structure type would be proposed. BLM would approve or not approve their use on federally managed lands or require mitigation measures as appropriate.

2.1.4 Schedule Variation

The Proposed Action construction plan involved constructing all substation and transmission line facilities in the 2013 to 2018 time frame. The Proponents report that based on uncertain economic conditions, some of the potential customers that have requested transportation on Gateway West have cancelled or deferred project development plans. To maintain flexibility in an uncertain market and still meet customer requests, the Proponents have proposed a Schedule Variation for detailed analysis applicable to Segments 1 through 4. Table 2.1-7 shows the Schedule Variation construction schedule. Key elements of the Schedule Variation are described below.

- Constructing Segments 1E, 1W(a), 3A (345-kV line between the Anticline yard and the existing Jim Bridger Substation); one circuit of Segments 2, 3, and 4; construction of the Heward and Anticline Substations; and modifications to the Windstar, Aeolus, and Populus Substations.
- Shifting construction of Segment 1W(c); one circuit of Segments 2, 3, and 4; and modifications to the Windstar, Aeolus, Creston, Anticline, and Populus Substations to the 2018 to 2020 time frame[3].
- The second circuit for Segments 2, 3, and 4 would be operated at 500 kV when constructed; the Creston Substation would be constructed as a 500-kV substation; and Segment 3B (230 kV to the existing Jim Bridger Substation) would not be needed.

[3] The exact time frame for construction of the second single-circuit 500-kV transmission line and associated substation modification depends on market conditions and could occur from 1 to 5 years after completion of the first single-circuit 500-kV line. For the purpose of the environmental analysis, a midrange of 2018 to 2020 was selected.

Table 2.1-7. Schedule Variation Construction Schedule

Segment Number	Segment Name	Primarily Wyoming				Primarily Idaho			
		Phase 1		Phase 2		Phase 1		Phase 2	
		June 2013	Dec 2016	Nov 2018	Jan 2020	Jan 2015	Dec 2018	May 2018	Dec 2020
	Windstar Substation	Windstar Expansion							
	Heward Substation	Heward Substation							
	Aeolus Substation	Aeolus Expansion							
	Populus Substation	Populus Expansion							
	Anticline Substation	Anticline (Includes 345-kV bay at existing Jim Bridger Substation)							
1E	Windstar – Aeolus #2	Single-Circuit 230-kV							
1W(a)	Windstar – Aeolus #1	Single-Circuit 230-kV and rebuild a short section of the existing single-circuit 230-kV line							
2	Aeolus – Creston	Single-Circuit 500-kV							
3	Creston – Anticline	Single-Circuit 500-kV							
3A	Anticline – Bridger 345-kV	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			
	Windstar Substation			Windstar Expansion					
	Aeolus Substation			Aeolus Expansion					
	Creston Substation			Creston Substation					
	Populus Substation			Populus Expansion					
	Anticline Substation			Anticline Expansion					
1W(c)	Dave Johnston - Heward – Aeolus			Rebuild the existing single-circuit 230-kV line and build a short section of new single-circuit 230 kV line					
2	Aeolus – Creston			Single-Circuit 500-kV					
3	Creston – Anticline			Single-Circuit 500-kV					
4	Anticline – Populus			Single-Circuit 500-kV					
	Borah Substation							Borah Expansion	
	Midpoint Substation							Midpoint Expansion	
	Hemingway Substation							Hemingway Expansion	

Table 2.1-7. Schedule Variation Construction Schedule (continued)

Segment Number	Segment Name	Primarily Wyoming				Primarily Idaho			
		Phase 1		Phase 2		Phase 1		Phase 2	
		June 2013	Dec 2016	Nov 2018	Jan 2020	Jan 2015	Dec 2018	May 2018	Dec 2020
5	Populus – Borah							Single Circuit 500-kV	
6	Borah – Midpoint [1/]							Existing Single Circuit	
8	Midpoint – Hemingway							Single Circuit 500-kV	

1/ Segment 3B, the proposed 230-kV line in the vicinity of the proposed Anticline Substation and Jim Bridger Power Plant, would not be needed under the Design Variation.

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, 2009). Alternative routes, substation sites, and structures considered by the Proponents, but not evaluated in detail, are summarized further in the EIS, along with the BLM Interdisciplinary Team (IDT) rationale for not considering them.

The Proponents must meet the WECC minimum separation distance (1,500 feet or greater for longer spans) between 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 1.3.3.3, 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, if 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 discussion above), 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 2.4-2 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 Scoping

Since issuance of the Scoping Report, the BLM has continued to receive public comments that have resulted in the identification of additional alternative routes. In December 2008, the Proponents held informational meetings with landowners within a 2-mile-wide corridor focused on the Proposed Route and Route Alternatives finalized after scoping. These meetings led to the identification of additional alternatives for consideration. Further analysis and public input during 2009 and 2010 have resulted in additional routes and route changes described in this chapter and analyzed in detail in Chapter 3 as well as in the Revised Siting Study (IPC and RMP 2009).

2.2.4 Alternatives Requiring Plan Amendments

Table 2.2-1 lists federal land use plans affected by the Project. 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 Table 2.2-1 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 Visual Resource Management (VRM), Scenic Integrity Objective (SIO), and Visual Quality Objective (VQO)-driven amendments. As part of the ROD, the BLM and Forest Service will decide whether to implement the amendment, as well as the significance of the amendment, when the corresponding route or alternative is selected.

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 Permit 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, the Gateway West Project would not be constructed (no construction of the new substations, substation expansion, or the transmission line). The objectives of the Project, which include providing increased transmission capacity and a more reliable transmission line system for transport of primarily wind energy to meet existing and future needs (as described in Section 1. 3, Purpose and Need), would not be met. The cumulative effects of the No Action Alternative are found Chapter 4 and summarized in Section 2.10.

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Casper Resource Manage-ment Plan (RMP)	Proposed 1E, 1W(a), 1W(c); Alternative 1E-C	Visual resource values will be managed under the VRM classes defined as mapped in the Casper Field Office GIS database. Changes in the number of acres within each VRM class depict a balance between development activities and protection of visual resources. The foreground/middle ground of NHTs will be managed as Class II until inventories are completed. Trail segments contributing to the overall eligibility that have integrity of setting will be managed as VRM Class II. Where integrity of setting is lacking, the foreground/ middle ground of NHTs, will be managed as Class III. Manage 367,151 acres of BLM-managed surface and 816,310 acres of federal mineral estate as VRM Class II. Manage 433,799 acres of BLM-managed surface and 1,211,145 acres of federal mineral estate as VRM Class III. Manage 560,627 acres of BLM-managed surface and 2,629,717 acres of federal mineral estate as VRM Class IV.	The Gateway West Transmission Line Project will be allowed as a visually altering action resulting in the reclassification of 630 acres of VRM II to VRM III in the AOI C-1 (Deer Creek). The Gateway West Transmission Line Project will be allowed as a single-use visually altering action without changing the VRM classification for AOI C-2, C-3.1, C-3.3, and C-3.4 (Dugway Rim, Spruce Creek, and Bates Creek). Manage 366,521 acres of BLM-managed surface and 815,680 acres of federal mineral estate as VRM Class II. Manage 434,429 acres of BLM-managed surface and 1,211,775 acres of federal mineral estate as VRM Class III. Manage 560,627 acres of BLM-managed surface and 2,629,717 acres of federal mineral estate as VRM Class IV.	3.2.1.5, Appendix G-1, 3.3.3.3, 3.3.3.4, 3.10.1.5, 3.11.2.3, 3.6.1.5, 3.17.1.5
Medicine Bow National Forest Revised Land and Resource Manage-ment Plan (Forest Plan)	Proposed 1E, Alternative 1E-C	Management Prescription 3.31: Allow uses and activities only if they do not degrade the primitive character of the area.	The Gateway West transmission line will be allowed and the land crossed by the Project will be allocated to MA 8.3 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
	Proposed 1E, 1W(a), 1W(c); Alternative 1E-C	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, Appendix G-2, 3.17.1.5
	Proposed 1E, 1W(a), 1W(c); Alternative 1E-C	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 Medicine Bow National Forest timing restrictions for northern goshawks will be followed.	3.6.1.5, 3.10.1.5, 3.11.2.3

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Medicine Bow Forest Plan (cont.)	Proposed 1E, 1W(a), 1W(c); Alternative 1E-C	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 National Forest timing restrictions for northern goshawks will be followed.	3.10.1.5, 3.11.2.3, 3.6.1.5
	Proposed 1E, 1W(a), 1W(c); Alternative 1E-C	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, to be approved by the Medicine Bow Forest, applied to prevent impacts to the boreal toad, wood frog, or northern leopard frog.	3.10.1.5, 3.11.2.3, 3.6.1.5
Rawlins RMP 2009	Proposed 1E, Alternative 1E-B, Proposed 2	Visual Resource Management In VRM II class as shown on Map 2-50 (Table 2-9 and Appendix 25 or the RNP),	The Gateway West Transmission Line Project will be allowed as a single-use visually altering action without changing the VRM classification for AOI R-1 and R-2 (Laramie North and North Platte). The Gateway West Transmission Line Project will be allowed as a visually altering action resulting in the reclassification of 177 acres of VRM II to VRM III in the AOI R-2 (Laramie South).	Appendix G-1, 3.2.1.5, 3.10.1.5, 3.11.2.3, 3.6.1.5, 3.17.1.5
	Proposed 2	Surface-disturbing activities on public lands within 0.25 mile on either side of the North Platte River will be intensively managed to maintain the quality of the visual resource	"Surface disturbing activities on public lands within one-quarter mile on either side of the river will be considered on a case-by-case basis to maintain, to the extent possible the quality of the visual resource. The Gateway West Transmission Line Project will be allowed as a visually altering action without changing the VRM classifications in AOI R-3. Mitigation actions would aim to minimize visual disturbance to the river corridor."	3.2.1.5, 3.2.2.3, 3.17.1.5, 3.17.2.3
Green River RMP	Proposed 4	VRM – Projects and facilities will be designed to meet the objectives of the established visual classifications and appropriate mitigation will be included.	The Gateway West Transmission Line Project which will be permitted as a one-time allowance for the construction of access roads, placement of towers and double-circuit cables between towers where it would otherwise be in violation of the existing visual classifications for Segment 4 of the Proposed Route.	Appendix G-1, 3.2.1.5

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	Proposed 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.	The Gateway West Transmission Line Project will be allowed as a single-use visually altering action without changing the VRM classification.	Appendix G-1, 3.2.1.5
	Proposed 4, Alternatives 4B, 4C, 4D, 4E	Aboveground facilities (power lines, storage tanks fences, etc.) are prohibited on or within 1/4 mile of grouse breeding grounds (leks). Placement of facilities, 'on' (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction, seismic activity, etc., could be granted exceptions within 1/4 mile of leks, in certain circumstances.	Allow the Gateway West Transmission Line Project within 0.25 mile of sage grouse leks, this would include the construction of access and maintenance roads for the Project, with appropriate mitigation measures.	3.11.2.3
	Proposed 3, Proposed 4, Alternatives 4B, 4C, 4D, 4E	Project components, such as permanent and high profile structures, i.e., buildings, storage tanks, powerlines, roads, well pads, etc. are prohibited within an appropriate distance of active raptor nests. The appropriate distance (usually less than 1/2 mile) will be determined on a case-by-case basis and may vary depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc. Placement of facilities, "on" (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction, seismic activity, etc., could be granted exceptions within 1/2 mile of active raptor nests, in certain circumstances.	Permit the Gateway West Transmission Line Project as a one-time allowance for the construction and placement of Project transmission lines and towers within ½ mile of active raptor nests, with appropriate mitigation measures.	3.10.2.3, 3.11.2.2

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Kemmerer RMP	Proposed 4, Alternatives 4A,4F	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 whole 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. Proposed Route: Permit a one-time allowance for Gateway West Project to cross the Dempsey Hockaday NHT in section 32, T 24 N, R 117 W. Place towers as far from the trail as feasible. Alternative 4A: Permit a one-time allowance for 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. Alternative 4F: Permit a one-time allowance for 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, 4D	Historic Trails – Utility corridors are not designated where they are in conflict with NHT's management objectives. High-voltage powerline corridors are established north of and parallel to I-80, and along Wyoming SH 89 from the junction of I-80 and the Wyoming state line.	Designate a utility corridor 1 mile in width, generally centered on the transmission line if either Alternative Route 4B or 4D is selected. (The Project is not in conformance with this requirement but the BLM recommends identifying a utility corridor along the Gateway West route if either alternative is selected.)	3.2.1.5, Appendix G-1, 3.3.3.3, 3.3.3.4

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	Proposed 4, Alternatives 4A,4B,4C,4D, 4E,4F	"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 U.S. Highway 189 and east of Slate Creek Ridge in consideration of NHT views.	Proposed Route, Alternative Route 4A, and portions of Alternative Routes 4C and 4E north and east of highway 30/state Highway 89: Permit a one-time allowance for Gateway West Project without changing the VRM class for areas affected by the route. Alternative routes 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 T21N, R117W, Sec 25; then west following the high points of the topography approximately 3 miles south of the highway to T21N, R118W, Sec 28; then north-west following the high points of the topography within approximately 3 miles of the highway to T21N, R118 W, Sec 18; then north-west following the high points to within approximately ½ mile of the highway in T21N, R118W, Sec 12; then west to the junction of U.S. Highway 30/State Highway 89. Alternative route 4F: Permit a one-time allowance for 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 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	Proposed 4, Alternative 4A, 4F	"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."	Permit a one-time allowance for 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 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	Proposed 4	"Preserve the viewshed within 3 miles of the sites listed below, 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 site. ROW will be designed to preserve the visual integrity of the sites consistent with BLM visual resources handbook/manual. The management action is intended to manage developments to maintain setting qualities and not to have an exclusion zone. . ."	Permit a one-time allowance for Gateway West Project if micrositing cannot reduce impacts to a level that meets the RMP Decision requirements.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.6.1.5, 3.17.1.5
	Alternatives 4A, 4C, 4E	"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….."	Permit a one-time allowance for the Gateway West Project where it would otherwise be in conflict with the management objectives of Decision 7014. Micrositing and mitigation measures would 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

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Caribou Forest Plan	Proposed 4	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.	The management prescription will be changed to Prescription 8.1 –Concentrated Development areas to allow the Gateway West Transmission Line Project.	3.15.2.3, 3.17.2.3
	Proposed 4	Scenic Resources, 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 will be changed to Prescription 8.1 –Concentrated Development areas to allow the Gateway West Transmission Line Project.	2.4.5.2, 3.15.2.3, 3.17.2.3
	Proposed 4	Recreation, Guideline 4. Projects should be planned and implemented to meet the ROS as depicted on the Forest ROS map	The area within 500 feet of the transmission line and new permanent roads will be changed to Roaded Natural (affecting approximately 835 acres).	2.4.5.2, 3.15.2.3, 3.17.2.3
	Proposed 4	Goshawk Nesting Territories. The management Standards and Guidelines in Table 3.5, 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.	2.4.5.2 3.15.2.3, 3.10.2.3

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Malad MFP	Proposed 5, Alternative 5A; Proposed 7, Alternative 7A	VRM – Specific development proposals will be allowed, located and designed in accordance with the existing VRM class restrictions with emphasis on Class I areas.	The Gateway West Transmission Line Project will be allowed as a single-use visually altering action without changing the VRM classification.	Appendix G-1, 3.2.1.5, 3.10.1.5, 3.11.2.2, 3.17.1.5
	Proposed 5, Alternative 5A, 5B; Proposed 7, Alternative 7A, 7B	Future major utilities will be routed across public lands within the existing corridor systems.	Permit the Gateway West Transmission Line Project.	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
	Proposed 5, Alternative 5A, Proposed 7, Alternative 7A	Establish a protective corridor of 330 feet on visible segments of the Hudspeth Cutoff Trail. Continue adequate stipulation on permits, leases etc., to protect the trail	Allow the Gateway West Transmission Line Project with appropriate mitigation and micrositing.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.6.1.5, 3.10.1.5, 3.11.2.2
Sawtooth Forest Plan	Alternatives 7H, 7I, and 7J	VQO – All projects shall be designed to meet the adopted Visual Quality Objectives (VQOs) as displayed on the Forest VQO map. Portions of Alternative Segment are currently designated as Partial Retention (VMS). 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.	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, 3.15.2.3
	Alternative 7H	ROS – All projects and activities should maintain or enhance the adopted ROS classes as displayed on the Forest ROS strategy maps. New road construction should not occur within the summer Primitive and Semi-Primitive Non-Motorized areas. Facilities identified as being necessary should blend with the surrounding landscape character and ROS setting.	The affected area (at least 500 feet on each side of the transmission line and along new permanent roads) would be designated (mapped) as roaded natural.	3.2.1.5, Appendix G-2, 3.17.2.3, 3.15.2.3

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Cassia RMP	Proposed 7	Limit rights-of-way (ROWs) to existing facilities/localities	Permit the Gateway West Transmission Line Project.	3.2.1.5, 3.3.3.4, 3.3.3.4, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.2.3
	Alternatives 7I, 7J	Preserve scenic values in the Goose Creek Travel Zone (within ½ mile of the Goose Creek Road between Wilson Pass and the Utah border).	"The area classified as VRM Class II in the Goose Creek Travel Zone (within one-half mile of the Goose Creek Road Between Wilson Pass and the Utah border), will be reclassified as VRM Class III."	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, 7H, 7I, 7J	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.	The Gateway West Transmission Line Project will be allowed as a visually altering action resulting in the reclassification of: 122 acres of VRM II to VRM III in the AOI CA-1 (Jim Sage), 806 acres of VRM III to VRM IV in the AOI CA-2 (Cottonwood Creek), and 122 acres of VRM II to VRM III in the AOI CA-3 (Spring Canyon), and 20 acres of VRM II to VRM III in AOI CA-4 (Goose Creek). Permit a one-time allowance for the Project across VRM III in AOI CA-4 without changing the VRM classification.	Appendix G-1, 3.2.1.5
Twin Falls MFP	Proposed 9, Alternative 9A; Alternative 7I, 7J	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.	The Gateway West ROW will be allowed 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
	Proposed 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.	An amendment to allow the Gateway West Project either by changing the VRM class or as a single-use visually altering action without changing the VRM classification cannot be approved while this segment of the river is an eligible WSR.	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 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Twin Falls MFP (cont.)	Alternatives 7I, 7J	VRM 1.2 Designate 12,695 acres as VRM Class II. This class requires management activities to be designated and located to blend into the natural landscape and not to be visually apparent to the casual visitor. The following resource management guidelines shall apply: 1) Range Management – Juniper and sagebrush removal must be made to simulate adjacent natural openings. Fences, water developments, etc., would require construction with mostly hand tools and be of natural materials. No red fence posts allowed. 2) Structures – Structures must incorporate the natural lines, colors, and materials of the natural landscape, skylined structures would be prohibited. 3) Roads – Required roads must be concealed by vegetation, follow natural landforms, and be seeded as soon as possible. Overland "roads" may be necessary in some areas to protect the scenic values. Cut and fill areas that exceed 5 feet will generally not be accepted unless the fill can be replaced and vegetation established in 2 years.	Designate 12,625 acres as VRM Class II. This Class requires management activities to be designated and located to blend into the natural landscape and not to be visually apparent to the casual visitor. Designate 32,889 acres as VRM Class III. (see overlay D.5 and include 70 acres of previously VRM II land in the Rock Creek Area, north of the section line).	Appendix G-1, 3.2.1.5, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.15.2.3, 3.17.1.5, 3.19.1.5
Jarbidge RMP	Alternative 8A	MAU-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
	Proposed 8, Alternative 8A	MUA-3 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.	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 T 04 S R 09 E Section 35 and T 05 S R 09 E Section 2Section 35 to reclassify these areas as avoidance to accommodate a 500-kV powerline right of way.	3.2.1.5, 3.17.1.5
	Proposed 9	MUA-14 C) Lands, 1. Utility avoidance/restricted area – entire canyon (2,947 ac) (overhead, surface, underground).	The Gateway West ROW will be allowed to cross the ACEC. (The BLM has stated that they would not approve this amendment.)	3.2.1.5, 3.2.3, 3.10.1.5, 3.11.2.2, 3.6.1.5, 3.17.1.5

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Jarbidge RMP (cont.)	Proposed 9	No Development in the Salmon Falls Creek ACEC. "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. 1,532 acres."	An amendment would be needed to allow the crossing of the ACEC; however, the BLM cannot approve an amendment allowing a transmission line to cross the ACEC while this segment of the river is an eligible WSR.	Appendix G-1, 3.2.1.5, 3.3.3.5, 3.3.3.3
	Proposed 8	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 within the WWEC. 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
	Proposed 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 2,800 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
	Alternative 8A	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
	Proposed 9, Proposed 8, 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 (affects AOIs, J-2, BOP-1/J-3, J-4, and J-5)."	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

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Morley Nelson Snake River Birds of Prey National Conservation Area (SRBOP) RMP	Proposed 8	VRM II Protect the Oregon Trail 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 6,400 acres of Class II areas associated with the Oregon Trail and scenic values associated with the Oregon Trail and scenic values associated with the Snake River Canyon would be designated as Class III to accommodate a major transmission line R/W.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5
	Proposed 8	2.16 Transportation – Lose the following areas to motorized vehicles: … Halverson Bar – 1,150 acres (Transportation Map A-145)	The Gateway West Project will be allowed to cross the Halverson Bar non-motorized area. (The BLM has indicated that this amendment would not be approved. An alternative route [8E] avoids this 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)	The Gateway West Project will be allowed to cross the Cove non-motorized area. (The BLM has indicated that this amendment would not be approved, an alternative route [9F/9H] avoids this area.)	2.4.9.2, 2.4.9.4, 3.17.1.5, 3.17.2.4
	Alternatives 9D, 9F, 9G, 9H	VRM II Protect the Oregon Trail 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 transmission line ROW. For Alternative 9G/9H: VRM Class II areas that are in view of the proposed transmission line would be inconsistent with the VRM II classification and would be reclassified to VRM III.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	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 ½ mile of occupied, sensitive plant habitat, with appropriate mitigation to protect sensitive plants, including slickspot peppergrass; where no construction, including roads, will occur within 50 feet of known or surveyed slickspot peppergrass habitat. Surveys shall be conducted that meet USFWS protocols prior to construction. Remediation will use weed-free seed mix and non-till methods in sensitive habitat and no soil placement over slickspot peppergrass 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.	3.6.1.5, 3.7.2.3
	Proposed 8, Alternatives 8D, 8E; Proposed 9, Alternatives 9D, 9E, 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 allow an additional major powerline ROW.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5
	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 as a one-time exception with required mitigation.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.2.3
	Proposed 8	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 transmission line.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.1.5

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
	Alternative 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 transmission line R/W.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.5, 3.17.1.5
Bennett Hills/ Timmer-man Hills RMP	Proposed 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 area within 3,000 feet to the north of the existing transmission line ROW will be reclassified from VRM II to VRM III (including the existing ROW).	Appendix G-1, 3.2.1.5
	Proposed 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,
Wells RMP	Alternative 7I, 7J	Corridor Designation 3. Locate new facilities in identified planning corridors.	The Gateway West Project will be allowed outside of identified planning corridors.	Appendix G-1, 3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.1.5
		The RMP classified the FO into visual resource management classes following BLM Manual 8400. A portion of the route crossed by the project is classified as VRM II.	The project will be allowed as a one-time, visually altering action without reclassifying the area.	
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 would 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 would be reclassified to VRM III.	Appendix G-1, 3.2.1.5, 3.17.2.3

Table 2.2-1 Land Use Plan Conformance and Proposed Amendment Summaries (continued)

Plan	Routes	Management Direction	Proposed Amendment	EIS Section
Kuna MFP	Proposed 8, Alternatives 8B and 8C[1/]	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 subject to reasonable stipulations to protect other resource uses.	The Gateway West Project will be allowed outside of existing corridors.	3.2.1.5, 3.3.3.3, 3.3.3.4, 3.17.2.5
	Proposed 8, Alternatives 8B and 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

1/ Additional alternatives would cross the Kuna MFP Management Area; however, these alternatives are addressed under the SRBOP RMP, which replaces the Kuna MFP in these areas.

R/W – right-of-way; WSR – Wild and Scenic River; WWEC – West-wide Energy Corridor

2.4 ROUTE ACTION ALTERNATIVES

The Proponents state that their overall Project approach was for the Proposed Route 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 upon closer examination, were eliminated from further consideration because it became clear that they provided no environmental benefit over the Proposed Action or one of the other alternatives considered in detail, they were not feasible for environmental, physical, or economic reasons, or they did not meet the Proponents' purpose and need. Site-specific alternatives considered and eliminated are shown on Figure A-1 for the whole Project and on Figures A-2 through A-12 (in Appendix A) for each segment. Each of these Route Alternatives is described in the following sections (Sections 2.4.1 through 2.4.12).

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). Alternatives considered but eliminated from detailed study are identified in purple type in Table 2.4-1 and purple color on the maps. They are labeled with geographically descriptive names (e.g., Shirley Basin Alternative). 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.

The reason for proposing these alternatives 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, one planned, and eight existing substations, alternatives proposed by the IDT or suggested by the public and those not considered in detail are described by segment between substations. Table 2.4-1 lists the alternatives considered by segment. 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	Designation	Reference Points	Determination
Segment 1 E – Windstar to Aeolus			
A-2	Segment 1E – Proposed	1, 1Ed, 1Ee, 1Ee.1, 1Ef, 1Eg, 1Ei, 1Ek, 2	**Proposed**
	Alternative 1E-A	1, 1Ee	**Feasible Alternative**
	Alternative 1E-B	1Eg, 1Eh, 1Ej, 1Ek	**Feasible Alternative**
	Alternative 1E-C	1Ee.1, 2	**Feasible Alternative**
	Central Laramie Mountains Alternative	1, 1Eg, 1Eb, 1Ec, 1Ek, 2	**Eliminated from Detailed Study**
	East of Laramie Mountains	1, 1Eh, 1Ej, 1Ek, 2	**Eliminated from Detailed Study**
	Fetterman Road Alternative	1, 1Ea, 1Eb	**Eliminated from Detailed Study**
	Medicine Bow Alternative	1Eb, 2	**Eliminated from Detailed Study**
Segment 1 W – Windstar to Aeolus			
A-2	Segment 1W(a) – Proposed	1, 1Wa, 1Wb, 1Wc, 1Wd, 2	**Proposed**
	Segment 1W(c) – Proposed	1x, 1x.1, 1x.2, 2	**Proposed**
	Alternative 1W-A	1, 1Wb	**Feasible Alternative**
	Shirley Basin Alternative	1, 2	**Eliminated from Detailed Study**
Segment 2 – Aeolus to Creston			
A-3	Segment 2 – Proposed	2, 2a, 2d, 2e, 2e.1, 2e.2, 2e3, 2f, 2h, 2i, 3	**Proposed**
	Alternative 2A	2d, 2f	**Feasible Alternative**
	Alternative 2B	2e.1, 2e.3	**Feasible Alternative**
	Alternative 2C	2a.1, 2d.1, 2e.4	**Feasible Alternative**
	Rawlins Alternative	2h, 2g, 2i	**Eliminated from Detailed Study**
	Seven Mile Alternative	a – 2, 2a, 2c, 2d	**Eliminated from Detailed Study**
		b – 2, 2b, 2c, 2d	
Segment 3 – Creston to Bridger			
A-4	Segment 3 – Proposed	3, 3a, 4	**Proposed**
	Segment 3A	4, 3d, 3c	**Proposed**
	Segment 3B	4, 3e	**Proposed**
	Tipton Alternative	3, 3b, 4	**Eliminated from Detailed Study**

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

Figure	Designation	Reference Points	Determination
Segment 4 – Bridger to Populus			
A-5, A-6	Segment 4 – Proposed	4, 4a, 4b, 4f, 4e, 4f.6, 4f.4, 4j, 4k, 4m, 4n, 4o, 4p, 5	**Proposed**
	Alternative 4A	4b, 4f, 4e, 4f.1, 4f.2, 4g.1, 4g, 4f.4, 4j	**Feasible Alternative**
	Alternative 4B	4b, 4b.1, 4b.2, 4b.3, 4b.4, 4b.5, 4b.6, 4b.7, 4b.8, 4b.12, 4b.13, 4j	**Feasible Alternative**
	Alternative 4C	4b, 4b.1, 4b.2, 4b.3, 4b.4, 4b.5, 4b.6, 4b.7, 4b.13, 4j	**Feasible Alternative**
	Alternative 4D	4b, 4b.1, 4b.2, 4b.3, 4b.5, 4b.6, 4b.8, 4b.12, 4b.13, 4j	**Feasible Alternative**
	Alternative 4E	4b, 4b.1, 4b.2, 4b.3, 4b.5, 4b.6, 4b.7, 4b.13, 4j	**Feasible Alternative**
	Alternative 4F	4b, 4f, 4e, 4f.1, 4f.2, 4f.5, 4f.3, 4f.4, 4j	**Feasible Alternative**
	Caribou-Targhee Alternative	4n, 4p	**Eliminated from Detailed Study**
	Consolidation/Relocation Alternatives	(see Figure 2.4-1)	**Eliminated from Detailed Study**
	Kemmerer Alternative A	4b, 4f, 4c, 4g, 4f.4	**Eliminated from Detailed Study**
	Kemmerer Alternative B	4.b.2, 4b.9, 4b.11, 4b.12	**Eliminated from Detailed Study**
	Kemmerer Alternative C	4b, 4f, 4f.2	**Eliminated from Detailed Study**
	Montpelier Alternative	4k, 4l, 4n	**Eliminated from Detailed Study**
	Populus Alternative	4p, 4q, 5	**Eliminated from Detailed Study**
	Rock Springs Alternative	4a, 4d, 4e	**Eliminated from Detailed Study**
	Southern WWE Corridor - Utah Alternative	4b, 7e	**Eliminated from Detailed Study**
Segment 5 – Populus to Borah			
A-7	Segment 5 – Proposed	5, 5a, 5a.1, 5g, 5b, 5i, 5j. 5l, 6	**Proposed**
	Alternative 5A	5a.1, 5x, 5c, 5k, 5j	**Feasible Alternative**
	Alternative 5B	5a.1, 5x, 5f, 5c, 5k, 5j	**Feasible Alternative**
	Alternative 5C	5g, 5l	**Feasible Alternative**
	Alternative 5D	5i, 5d, 5e, 5h, 6	**Feasible Alternative**
	Alternative 5E	5l, 5m, 6	**Feasible Alternative**
	Craters of the Moon (North) Alternative	5, 5n, 8	**Eliminated from Detailed Study**
	Craters of the Moon (South) Alternative	5, 5n, 5o, 8	**Eliminated from Detailed Study**
	Deep Creek Alternative A	5, 5a, 5d	**Eliminated from Detailed Study**
	Deep Creek Alternative B	5b, 5e	**Eliminated from Detailed Study**
Segment 6 – Borah to Midpoint			
A-8	Segment 6 – Proposed	6, 8	**Proposed**

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

Figure	Designation	Reference Points	Determination
Segment 7 – Populus to Cedar Hill			
A-9	Segment 7 – Proposed	5, 7a.0, 7b.0, 7c, 7d, 7e, 7v, 7g, 7h, 7j, 7j.1, 7k, 7l, 7y, 7m.1, 7t, 7s, 7s.3, 7s.1, 7z, 9	**Proposed**
	Alternative 7A	7b.0, 7b.1, 7b, 7d	**Feasible Alternative**
	Alternative 7B	7b.0, 7b.1, 7a.2, 7a.1, 7b, 7d	**Feasible Alternative**
	Alternative 7C	7e, 7f, 7g	**Feasible Alternative**
	Alternative 7D	7g, 7w, 7h	**Feasible Alternative**
	Alternative 7E	7j, 7j.2, 7l	**Feasible Alternative**
	Alternative 7F	7h, 7j.2, 7m.1	**Feasible Alternative**
	Alternative 7G	7s.1, 7s.2, 7z	**Feasible Alternative**
	Alternative 7H	5, 7a.0, 7b.0, 7b.1, 7a.2, 7r.4, 7r.1, 7g.2, 7q.1, 7s.3, 7s.1, 7z, 9	**Feasible Alternative**
	Alternative 7I	5, 7a.0, 7b.0, 7b.1, 7a.2, 7r.4, 7r.1, 7r.2, 7r.3, 9a.1, 9	**Feasible Alternative**
	Alternative 7J / Rogerson Substation	5, 7a.0, 7b.0, 7b.1, 7a.2, 7r.4, 7r.1, 7r.2, 7r.3, 13 + 13, 9a.6 + 9, 9a.1, 13	**Feasible Alternative**
	Deep Creek Alternative	5, 7b, 7d	**Eliminated from Detailed Study**
	Burley Alternative	7e, 7u, 7g	**Eliminated from Detailed Study**
	Oakley Alternative	7m, 7p, 7o, 7q, 7t, 7s	**Eliminated from Detailed Study**
	Artesian City Alternative	7m, 7p, 7q, 7t, 7s	**Eliminated from Detailed Study**
	Cassia Alternative	7j.1, 7x, 7n, 7s	**Eliminated from Detailed Study**
	I-84 South Alternative	7g, 7i, 9g, 9h	**Eliminated from Detailed Study**
	Foothills Alternative	7j.1, 7x, 7y	**Eliminated from Detailed Study**
	Malta Bypass Alternative 1	7r.4, 7g.1, 7g.2	**Eliminated from Detailed Study**
	Malta Bypass Alternative 2	7g, 7g.1, 7g.2, 7q.1, 7s.3	**Eliminated from Detailed Study**
	Pinchpoint and Borah Substation Alternative	7d, 12, 8	**Eliminated from Detailed Study**
Segment 8 – Midpoint to Hemingway			
A-10	Segment 8 – Proposed	8, 8a, 8b, 8c, 8c.1, 8c.2, 8q, 8r, 8r.1, 8r.3, 8r.4, 8r.5, 9t, 9v, 11	**Proposed**
	Alternative 8A	8, 8c.1	**Feasible Alternative**
	Alternative 8B	8q, 8r, 8s, 8g, 8h, 8j, 8k, 8l, 8m, 8n, 8p, 11	**Feasible Alternative**
	Alternative 8C	8q, 8o, 8s	**Feasible Alternative**
	Alternative 8D	8r.1, 8r.2, 8r.3	**Feasible Alternative**
	Alternative 8E	8r.4, 9r.4, 9r.5, 8r.5	**Feasible Alternative**
	Bennett Hills Alternative	8b, 8f, 8o	**Eliminated from Detailed Study**
	Blair Trail Alternative	8c, 8d, 8e, 8f, 8o	**Eliminated from Detailed Study**

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

Figure	Designation	Reference Points	Determination
	Gooding North Alternative	8, 8e, 8c.2	**Eliminated from Detailed Study**
	I-84 North Alternative	8, 8c, 8c.1	**Eliminated from Detailed Study**
	I-84 North Variation Alternative	8, 8a, 8c, 8c.1	**Eliminated from Detailed Study**
	King Hill Alternative	8b, 8e, 8f, 8o	**Eliminated from Detailed Study**
	McElroy Butte Alternative	8h, 8i, 8j, 8l, 8n, 11	**Eliminated from Detailed Study**
	Summer Lake-Midpoint Alternative	8g, 8p, 11	**Eliminated from Detailed Study**
	WWE Corridor Alternative	8c.1, 8d, 8e, 8f, 8o	**Eliminated from Detailed Study**
Segment 9 – Cedar Hill to Hemingway			
A-11	Segment 9 – Proposed	9, 9a, 9a.2, 9a.3, 9a.4, 9a.5, 9c.1, 9e.1, 9e.2, 9h, 9i, 9n, 9l, 9m, 9m.1, 9p, 9w, 11	**Proposed**
	Alternative 9A	9a, 9a.3	**Feasible Alternative**
	Alternative 9B	9a.5, 9b, 9c, 9d, 9e, 9g, 9h	**Feasible Alternative**
	Alternative 9C	9a.5, 9b, 9c, 9c.1	**Feasible Alternative**
	Alternative 9D	9n, 9n.1, 9r, 9r.1, 9r.4, 9r.5, 9p	**Feasible Alternative**
	Alternative 9E	9n, 9s, 9p	**Feasible Alternative**
	Alternative 9F	9n, 9l, 9m, 9m.1, 9n.1, 9r, 9r.1, 9r.4, 9r.5, 9p	**Feasible Alternative**
	Alternative 9G	9n, 9n.1, 9r, 9r.1, 9r.2, 9p	**Feasible Alternative**
	Alternative 9H	9n, 9l, 9m, 9m.1, 9n.1, 9r, 9r.1, 9r.2, 9p	**Feasible Alternative**
	I-84 South Alternative	7g, 7i, 9g, 9h	**Eliminated from Detailed Study**
	Blue Ridge Alternative	9c.1, 9f	**Eliminated from Detailed Study**
	Magic Valley Alternative	9, 9e, 9e.1, 9f, 9h	**Eliminated from Detailed Study**
	Magic Valley-Saylor Creek Alternative	9b, 9m	**Eliminated from Detailed Study**
	Saylor Creek Alternative	9i, 9j, 9l	**Eliminated from Detailed Study**
	Central Birds of Prey NCA Alternative	9m, 9r, 11	**Eliminated from Detailed Study**
	I-78 Alternative	9q, 9t, 9v, 11	**Eliminated from Detailed Study**
Segment 10 – Cedar Hill to Midpoint			
A-12	Segment 10 – Proposed	8, 10a, 10c, 9	**Proposed**
	Minidoka Alternative	10a, 10b, 10c	**Eliminated from Detailed Study**

2.4.1 Segment 1E – Windstar to Aeolus

2.4.1.1 General Description and Issues

Segment 1E would include construction and operation of one single-circuit 230-kV transmission line between the existing Windstar Substation near the Dave Johnston Power Plant at Glenrock, Wyoming, and the planned Aeolus Substation near Hanna, Wyoming. Segment 1E would be about 100.6 miles long. The 230-kV line 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 Segment 1E Proposed Route and Route Alternatives between the Windstar and the Aeolus Substations.

Eastern routes between Windstar and Aeolus were considered. In the northern portion of Segment 1E, routes were identified to avoid multiple transmissions lines across landowners located along the existing Dave Johnston – Rock Springs transmission line corridor. The southern end of the Proposed Route was routed by the Proponents to more easily access the wind energy resources north of Medicine Bow. Several routes including routes across as well as mostly east of the Laramie Mountains were considered and eliminated by the Proponents resulting from scenic concerns and public opposition to development of a new Greenfield route[4]. Among the key factors considered in routing this segment were visual resources, wildlife resources (sage-grouse, big game winter range, and nesting raptors), and geologic features (an ice cave).

2.4.1.2 Proposed Route

The proposed 100.6-mile transmission line route (points 1, 1Ed, 1Ee, 1Ee.1, 1Ef, 1Eg, 1Ei, 1Ek, 2) begins at the existing Windstar Substation, located just north of the existing Dave Johnston Power Plant, approximately 3.5 miles east of Glenrock, Wyoming, in Converse County. From Windstar, the proposed 230-kV line would proceed west for approximately 6 miles, crossing the Burlington Northern Railroad, then the North Platte River, then Chicago and Northwestern Railroad, and Wyoming Highway 20. At milepost (MP) 6.2, the route would turn to the southwest, crossing Interstate 25 (I-25) and several 69-kV, 115-kV, and 230-kV powerlines on a route approximately 2 miles north and west of Deer Creek.

At MP 15.6, the route would turn south passing into the Laramie Mountains, crossing into Natrona County at MP 23.1. Between MPs 8.7 to 17.5, 31.6 to 33.5, and MPs 61.6 to 77, the Proposed Route would be on a new ROW within the Natrona Sage-Grouse Core Area (Natrona Core Area). Between MPs 17.5 to 27.2 and 30.5 to 31.6, the route would be adjacent to an existing transmission line in sage-grouse core area and crucial big game winter range. Continuing to the south-southwest, the route would pass through portions of the Medicine Bow-Routt NFs (MPs 30.2 to 36.6) crossing both private and NFS lands, and the Bates Hole Management Area (MA; MPs 31 to 33.7). The Casper RMP states that no new utility corridors will be designated in Bates Hole, except within already existing corridors. Approximately 1.7 miles of the route would be outside the WWE corridor in this area.

[4] A “Greenfield route” is a route that would be located away from existing linear corridors, thereby creating a new land use.

At MP 31.3 (point 1Ef) the route would turn to the southeast, re-entering Converse County at MP 36.1, and staying just north of the sage-grouse core area. The route would enter Albany County at MP 43.8, and continue to the southeast for an additional 14 miles.

At mile 57.2 (point 1Eg), the Proposed Route would turn south. Beginning at MP 79, the route would be located within crucial big game winter range, as well as near a proposed wind farm area. At MP 85, the route enters Carbon County and turns west, passing through several miles of crucial big game winter range, intercepting several raptor nest buffers, and one sage-grouse lek buffer.

At MP 95.8 (point 1Ek) the route would pass just north of the Medicine Bow River and into Aeolus Substation. Between MPs 31.3 and 100.5, a new Greenfield route would be developed. The Proposed Route would be Greenfield for 86.5 miles and parallel an existing transmission line for 9.5 miles.

The Proposed Route would not be consistent with the management direction provided in the Medicine Bow Forest Plan, nor would it be in conformance with the Casper and Rawlins RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resource amendments.

2.4.1.3 Alternatives Eliminated from Detailed Study

East of Laramie Mountains Alternative (1, 1Eh, 1Ej, 1Ek, 2)

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. 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 (point 1Ek) the route would intersect with the Segment 1E Proposed Route, passing just north of the Medicine Bow River and into Aeolus Substation.

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.

Fetterman Road Alternative (1, 1Ea, 1Eb)

The Fetterman Road Alternative, which would have replaced a portion of the Central Laramie Mountain Alternative between points 1, 1Eg, and 1Eb, 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. 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 2009a) 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 to reference point 1Eb.

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 (1, 1Eg, 1Eb, 1Ec, 1Ek, 2)

The Central Laramie Mountains Alternative was originally the Proposed Route for the 1E corridor. 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 State Route (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.

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

- Is entirely a Greenfield route;
- Contains scenic views in the Laramie Mountains outside of existing transmission line corridors;
- 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 (1Eb, 2)

The Medicine Bow Alternative was identified as an alternative at the southern end of the central Laramie Mountain routes between points 1Eb and 2. It extends from point 1Eb through Albany County, across the Thunder Basin Flats, crossing U.S. Highway 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.

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

- Is entirely a Greenfield route;
- 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.

2.4.1.4 Alternatives Studied in Detail

Alternative 1E-A (1, 1Ee)

Alternative 1E-A is considered a feasible alternative to the northern segment of Alternative 1E-C because it would parallel, but be offset 1,500 feet from, the existing Dave Johnston –Rock Springs 230-kV transmission line (line 1W[c]). The Segment 1W(c) utility corridor is also partially a WWE corridor and a BLM-designated ROW corridor. This alternative is approximately 16.1 miles long, compared to 17.6 miles for the corresponding portion of the Proposed Route.

Alternative 1E-A would begin at the existing Windstar Substation heading southwest, crossing the Burlington Northern Railroad, the North Platte River, the Chicago and Northwestern Railroad, Wyoming Highway 87, a 230-kV transmission line, and I-25. The alternative would pass through crucial big game winter range at MPs 3.5 to 6.8, and 8.1 to 15.6, as well as state land between MPs 4.9 to 9.3, 10.9 to 12.4, and 15.3 to 16.1. The alternative would cross Deer Creek at MP 15.5 and terminate at point 1Ee. No sage-grouse core areas would be crossed by this alternative.

No land use plan amendment is required for this alternative.

Alternative 1E-B (1Eg, 1Eh, 1Ej, 1Ek)

Alternative 1E-B is considered a feasible alternative to the southern segment of the Proposed Route, because it would avoid the Natrona sage-grouse core area. This alternative is approximately 59.3 miles long, compared to 37.9 miles for the corresponding portion of the Proposed Route.

Alternative 1E-B begins at MP 58.0 of the Proposed Route. The route parallels, but stays just north of, the sage-grouse core area for a distance of approximately 4 miles to Smith Mountain. The route then proceeds to the south, crossing the Rock Creek and Fort Fetterman Road at MP 6.6. At MP 7, the alternative would be located just east of the sage-grouse core area, continuing for about 19 miles, crossing the North Laramie River at MP 16. Three VRM Class II areas of less than 0.5 mile each are encountered at MPs 11, 13, and 14. At MP 22.8, the alternative turns to the southeast following a bend in the sage-grouse core area passing just north of Red Hill, then re-crossing Rock Creek and Fort Fetterman Road at MP 30. The alternative turns to the west at MP 33.3 (point 1Eh) and crosses big game crucial winter range at MP 41.6. The alternative crosses Rock Creek at MP 46.6, 1 mile north of Aurora Lake. At MP 48.8, the alternative turns to the northwest, intercepting two raptor nest buffers, and staying just north of Slate Ridge. The alternative crosses Little Medicine Bow River at MP 56.3 before rejoining the Proposed Route at MP 59.3 (point 1Ek). It is 21.4 miles longer than the comparison portion of the Proposed Route. This alternative would be a Greenfield route for its entire length.

Alternative 1E-B would not be in conformance with the management direction provided in the Rawlins RMP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 1E-C (1Ee.1, 2)

Alternative 1E-C was identified by BLM to maximize the use of existing utility and designated WWE corridors, and because it is the most direct route between points 1Ee.1 and 2. This alternative is approximately 48.7 miles long, compared to 75.4 miles for the corresponding portion of the Proposed Route.

Alternative 1E-C would be parallel to, but separated from, and west of, the proposed location of Proposed Routes 1W(a) and 1W(c) by 1,500 feet for its entire length (it would travel between point 1Ee.1 to the planned Aeolus Substation in Carbon County). Alternative 1E-C is shorter than the comparison portion of the Proposed Route and is

entirely parallel to an existing transmission line. After crossing the Carbon/Converse County line, the alternative would proceed parallel to the existing 230-kV line across the west fork of Duck Creek and over the Deer Creek Range. At approximately MP 10, the alternative crosses Ice Cave Mountain, the "Ice Cave," a local historical site that was a July 4th gathering spot for the community where they would meet to celebrate and cut ice to take home to their ice boxes. The alternative then proceeds generally south, passing east of Bates Creek Reservoir before crossing SR 487. The alternative would parallel the west side of SR 487 for about 14 miles to MP 59.5 (of Proposed Route 1W[c]) where the alternative would turn southwest and proceed along the northwest side of the Freezeout Mountains before terminating at the planned Aeolus Substation. During final design, the alignment may need to be modified to avoid the ice caves.

The one area where BLM has not designated the existing corridor as a ROW corridor is within the Bates Hole MA (crossed between MPs 5.7 and 16.0), in the southern portion of the Casper FO. Bates Hole is identified by BLM as a new ROW exclusion area (BLM 2007a). However, avoidance of this area could not be achieved without substantially compromising several other environmental factors, as described for the similar effects of the alternative (Section 2.4.2.3). Furthermore, the Casper RMP (BLM 2007a) specifically states that while no new utility corridors will be designated in Bates Hole, use of existing corridors in the area is acceptable if it is not feasible to follow one of the designated corridors. This alternative would cross approximately 20 miles of the Natrona Core Area adjacent to the existing Dave Johnston – Difficulty – Rock Springs transmission line.

Alternative 1E-C would neither be consistent with the management direction provided in the Medicine Bow Forest Plan nor be in conformance with the Casper and Rawlins RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.2 Segment 1W – Windstar to Aeolus

2.4.2.1 General Description and Issues

Segment 1W is composed of two parts, Segment 1W(a) and 1W(c), both consisting of portions of a new single-circuit 230-kV transmission line and reconstruction of a portion of the existing Dave Johnston – Rock Springs 230-kV transmission line between the existing Windstar Substation and the planned Aeolus Substation. 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 is a map of the Segment 1W routes.

The existing transmission line that would be reconstructed along portions of Segment 1W(a) and 1W(c) 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. Approximately 9 miles of Segment 1W(a) consists of this reconstructed line; the reconstructed line would extend from approximately MP 30 to MP 39 (Segment

1W(a) is about 76.5 miles long in total length). The reconstructed portion of Segment 1W(c) would be approximately 60 miles long and would extend from the existing terminus in the Dave Johnston Power Plant to about MP 24 and from MP 34 to the planned Aeolus Substation (Segment 1W(c) is about 70.6 miles long in total length).

Segment 1W(a) would carry the fiber optic communication system for Segment 1. Because of its length it would need an optical signal regeneration site approximately midway along its route. Final locations for the regeneration station will be determined after the preferred alternative is selected and detailed design engineering 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, combined, are within or parallel to the WWE corridor or projected (which is also an existing utility corridor in this portion) for a combined total of 125.4 miles out of a combined total route length of 147.1 miles. Among the key factors considered in routing this segment were wildlife resources (sage-grouse, big game winter range, and raptors), cultural resources, historic trails, and wetlands.

2.4.2.2 Proposed Route

The Proposed Route 1W(a) would consist of a new transmission line from the Windstar Substation to about MP 30 (approximately 2 miles north of where the route enters the Medicine Bow-Routt NF) and again from near MP 39 to the endpoint. Between these two points it would consist of a rebuild of an existing 230-kV line. This switch is proposed to avoid a local historic site at Ice Cave Mountain (see Alternative 1E-C above). The rebuild portion of this route would involve replacement of the existing wood H-frame structures with steel pole H-frame structures, similar in height and appearance to the existing line. The route (including the new portion of the line and the rebuild portion together as one route) would extend from the Windstar Substation south and west to the planned Aeolus Substation (points 1, 1Wa, 1Wb, 1Wc, 1Wd, 2). Beginning at Windstar, the proposed line would proceed to the northwest and west staying just north of an existing 230-kV line and about 1 mile north of the North Platte River. At MP 7.4, the line turns to the south, crossing two historic trails, an oil and gas well field, Burlington Northern Railroad, North Platte River, Wyoming Highway 87/20, and I-25. The route crosses one raptor nest buffer north of the interstate. At MP 11.2, the line turns to the southwest for approximately 10 miles, at which point the route is parallel to and west of Segment 1W(c). The routes maintain a minimum of separation of 1,500 feet to meet reliability criteria.

Proposed Route 1W(c) would consist of a rebuild of an existing 230-kV line from the Dave Johnston Power Plant to about MP 24 and from about MP 34 to the Aeolus Substation. Between MPs 24 and 34, the route would consist of a new 230-kV line transmission line to avoid a local historic site at Ice Cave Mountain (see Alternative 1E-C above). The rebuild portion of this route would involve replacement of the existing wood H-frame structures with steel pole H-frame structures, similar in height and appearance to the existing line. The route (including the new portion of the line and the rebuild portion together as one route) would leave the existing substation at the Dave Johnston Power Plant and proceeds south and west to the vicinity of the Aeolus Substation, a distance of approximately 70.6 miles (points 1x, 1x.1, 1x.2, 2). Upon

reaching the Aeolus Substation, the new 230-kV line would be looped in and back out of the Aeolus Substation continuing through intermediate substations to the Rock Springs Substation.

From reference points 1Wb and 1Ee near Banner Mountain, Proposed Routes 1W(a) and 1W(c) follow similar paths, proceeding to the south crossing into Carbon County at approximately MP 25. After crossing the county line, the two Proposed Routes would cross the West Fork of Duck Creek and the Deer Creek Range. After crossing the county line, the two Proposed Routes would cross the West Fork of Duck Creek and the Deer Creek Range. At reference points 1Wc and 1x.1, the Proposed Routes for Segments 1W(a) and 1W(c) would each shift alignment approximately 1,500 feet to the southeast. For about 9 miles, 1W(a) would follow the existing Dave Johnston – Rock Springs alignment to before turning southwest at MP 39. From approximately MP 24, Segment 1W(c) would shift 1,500 feet east of the existing Dave Johnston – Rock Springs line before rejoining it at MP 34. This 9-mile shift in alignment was precipitated by landowner comments about potential impacts to an historic ice cave located west of 1W(a) at MP 37.5. The modified alignment avoids the ice cave by approximately 1,500 to 3,000 feet. Upon resuming their original alignments, 1W(a) and 1W(c), along with Alternative 1E-C, proceed generally south passing east of Bates Creek Reservoir before crossing SR 487. The Proposed Routes would parallel the west side of SR 487 for about 14 miles to MP 59.5 where they would turn southwest and proceed along the northwest side of the Freezeout Mountains before terminating at the planned Aeolus Substation at MP 76.5 (MP 70.6 for the Dave Johnston – Rock Springs line). As with Alternative 1E-C, Segment 1W(a) and 1W(c) Proposed Routes proceed generally south passing east of Bates Creek Reservoir before crossing SR 487. The two Proposed Routes would parallel the west side of SR 487 for about 14 miles to MP 59.5 where the lines would turn southwest and proceed along the northwest side of the Freezeout Mountains before terminating at the planned Aeolus Substation at MP 76.5 (MP 70.6 for 1W[c]).

Alternatives for this segment focused on the feasibility of following the existing utility corridor that is also partially a WWE corridor in portions and BLM- and Forest Service-designated ROW corridor in other portions (BLM 2007a, 2008a). They also cross the Bates Hole MA.

The Proposed Route 1W(c) would neither be consistent with the management direction provided in the Medicine Bow Forest Plan nor be in conformance with the Casper and Rawlins RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.2.3 Alternatives Eliminated from Detailed Study

Shirley Basin Alternative (1, 2)

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 U.S. Highway 20/26 and traversing Emigrant Gap Ridge. This alternative would continue southwest for approximately 27 miles until meeting U.S. Highway 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.

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;
- 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.

2.4.2.4 Alternatives Studied in Detail

Alternative 1W-A (1, 1Wb)

Alternative 1W-A was considered as an alternative by the Proponents because it follows an existing transmission line and is parallel to Alternative 1E-A. This alternative is approximately 16.2 miles long, compared to 20.3 miles for the corresponding portion of the Proposed Route.

Alternative 1W-A would be an alternative to the north end of the Proposed Route between points 1, 1Wa, and 1Wb, and would be located parallel to Alternative 1E-A. Therefore, its description is nearly identical to that for Alternative 1E-A. This alternative would begin at the proposed Windstar Substation heading southwest, crossing the Burlington Northern Railroad and the North Platte River. If Proposed Route 1E is constructed, this segment would cross it just west of the river. The route continues west, crossing the Chicago and Northwestern Railroad, Wyoming Highway 87, a 230-kV transmission line, and I-25. The route passes through big game crucial winter range at MPs 3.7 to 6.8 and 8.1 to 15.5, paralleling to the north of Proposed Route 1W(c). The route crosses Deer Creek at MP 15.4 and terminates at reference point 1Wb on the Proposed Route 1W(a).

No land use plan amendment is required for this alternative.

2.4.3 Segment 2 – Aeolus to Creston

2.4.3.1 General Description and Issues

Segment 2 consists of one double-circuit 500-kV transmission[5] line between the Aeolus Substation and the Creston Substation near Wamsutter, Wyoming. The line would be constructed with double-circuit 500-kV designed structures but would be initially energized at 230 kV on one side and 500 kV on the other. This segment generally follows a WWE corridor and existing transmission lines. Appendix A, Figure A-3 is a map of Segment 2 between the Aeolus and Creston Substations.

Segment 2 as proposed would use 500-kV double-circuit lattice towers between 160 and 190 feet tall as shown in Appendix B, Figure B-3. In addition, the Proponents are considering using two single-circuit structures in place of the double-circuit structure (Appendix B, Figure B-5). This variation is discussed in Section 2.1.2. Whether built with one tower in a double-circuit configuration or with two towers in single-circuit configuration, both structures for Segment 2 would be built to 500-kV standards.

Segment 2 is about 96.7 miles long and therefore would need an optical signal regeneration site approximately midway along the route. Final locations for regeneration stations would be determined after the preferred alternative is identified and 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[6] 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 current Proposed Route would have the least impact on Fort Fred Steele and residences among the Route Alternatives.

2.4.3.2 Proposed Route

The proposed 96.7-mile-long 500-kV double-circuit line (points 2, 2a, 2a.1, 2d, 2e, 2e.4, 2e.1, 2e.2, 2e.3, 2f, 2h, 2i, 3) would exit the planned Aeolus Substation directly west crossing County Route (CR) 121 and the Medicine Bow River paralleling the north side of the Seven Mile Hill Wind Energy Project. About 4.3 miles west of the substation, this route turns south for about 8.1 miles to the south side of U.S. Highway 30/287 about 3.5 miles east of community of Hanna, Wyoming.

On the south side of U.S. Highway 287/30, the route turns southwest and generally parallels the highway for about 21.2 miles, crossing SR 72, Sand Hills, and Dana Ridge. Approximately 3.0 miles northeast of I-80, the Proposed Route crosses U.S. Highway 287/30 (MP 32.5). At MP 39.7, the route turns southwest crossing BLM-managed land,

[5] A double-circuit 500-kV transmission line is composed of six electrical phases (two independent circuits of three phases each) and two lightning protection shield wires. One of the lighting protection shield wires is a steel OHGW, and the other is an OPGW. The OPGW contains glass fibers used for communication along the fiber path for data transfer between the Proponents' facilities. The data transferred are required for system control and monitoring.

[6] PacifiCorp initiated siting studies for the Gateway South Project, which is a proposed transmission line from Aeolus to Mona in Utah, then from Mona to Crystal in southern Nevada. 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.

crossing I-80 at MP 41.3, and continuing between two raptor nest buffers to the east bank of the North Platte River at MP 42.2. From there, the route proceeds west, passing between two Wyoming Game and Fish Department (WGFD) parcels and a BLM SRMA, and north of an east-west ridge containing multiple raptor nests. The alternative route then passes through alternating sections of private and BLM-managed land, following an existing pipeline to the west for 1.6 miles before turning back to the west at MP 46.7.

Proceeding west, the Proposed Route passes north of Jefferson Flats, south of the Greenville Dome and a Wyoming penitentiary before crossing SR 71 about 2.4 miles south of Rawlins. Just west of SR 71, the route traverses Coal Creek and Coal Mine Ridge south and parallel to an existing 230-kV line. The route continues at varying distances from the existing line to the proposed Creston Substation. In this last 40-mile segment, the route crosses Hogback Ridge, Red Rim, and SR 789 before reaching the planned Creston Substation south of Wamsutter. The proposed 230-kV circuit would enter and exit this proposed substation and the 500-kV circuit would bypass the substation on single-circuit steel lattice structures. They resume in a double-circuit 500-kV configuration to the Anticline Substation.

The Proposed Route would follow the WWE corridor, which is also a BLM-designated ROW corridor (BLM 2008a), where feasible. It diverts only to avoid the Fort Fred Steele Historic site, 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 utility corridor) for 52.4 miles out of a total route length of 96.7 miles. Of its 96.7-mile length, the route parallels existing transmission lines for 50 miles. The Proposed Route would be within the Hanna Sage-Grouse Core Area (Hanna Core Area) on a Greenfield route from approximately MPs 3.0 to 17 and MPs 23.0 to 32.0.

The Proposed Route would not be in conformance with the management direction provided in the Rawlins RMP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.3.3 Alternatives Eliminated from Detailed Study

Seven-Mile Alternative (2, 2b, 2c, 2d)

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 points 2 and 2d. However, as proposed, 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. 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 (2h, 2g, 2i)

The Rawlins Alternative was initially considered in order to avoid sage-grouse lek buffers by at least 0.65 mile. It would begin at point 2h, diverging south of the Proposed Route (which follows the existing utility corridor and the WWE corridor) by up to 2 miles (at point 2g) on new ROW before rejoining the Proposed Route at point 2i. 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, as of the date it was originally proposed, it:

- Does not follow existing utility corridor or the WWE corridor.

2.4.3.4 Alternatives Studied in Detail

Alternative 2A (2d, 2f)

Alternative 2A was initially considered because it would follow an existing utility corridor that is also a WWE corridor and a BLM-designated ROW corridor. However, this alignment is not the Proposed Route because it would cross within 0.25 mile of a known sage-grouse lek and within 0.65 mile of two other leks, would cross a number of gas or oil well buffers, and would be located in proximity to Fort Steele residents. This alternative is approximately 28.4 miles long, compared to 28.8 miles for the corresponding portion of the Proposed Route.

Alternative 2A would begin at Hanna Junction, just south of the intersection of SR 72 and U.S. Highway 287/30, point 2d. This alternative follows an existing 230-kV transmission line for a total of 23.2 miles beginning at Hanna Junction, crossing to the north side of U.S. Highway 287/30, then heading in a southwesterly direction, crossing Saint Mary's Creek at MP 7.3, running about 1 mile south of Saint Mary's Ridge, and crossing Saint Mary's Creek again at MP 14.3, just north of Walcott at MP 17.6. At this point, this alternative proceeds due west for 5.7 miles, still following the existing 230-kV transmission line, traversing the southern Fort Steele Breaks, crossing Saint Mary's Creek a third time at MP 20.4 and the North Platte River at MP 22.1, to a location south of Fort Steele at MP 23.3. At this point, this alternative would depart from the existing transmission line and head generally southwest, crossing to the south side of I-80 and U.S. Highway 287/30 at MP 25.8, and continuing another 2.5 miles to a location just southeast of Grenville Dome and approximately 2 miles southeast of Sinclair. This alternative would be substantially more visible from the Fort Fred Steele State Historic site than the Proposed Route would be. This alternative would parallel existing transmission lines for 26 miles.

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

Alternative 2B (2e.1, 2e.3)

Alternative 2B was originally the Proposed Route; however, concerns by rural residents as well as issues related to visual impacts to a historic site resulted in the Proponents changing this route segment from proposed to a feasible alternative. This alternative is approximately 6.2 miles long, compared to 7.0 miles of the corresponding portion for the Proposed Route.

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 corridor and the designated WWE corridor.

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

Alternative 2C (2a.1, 2d.1, 2e.4)

Alternative 2C was developed in response to the Wyoming Governor's EO 2011-5, which lays out a series of measures for greater sage-grouse core area protection. Stipulation 16 of the EO establishes a transmission line corridor through core population areas. This 2-mile-wide corridor is the State of Wyoming's preferred alternative for routing transmission lines across the southern portion of the state. The EO provides that new transmission lines within this corridor would be considered consistent with the EO. Therefore, BLM has identified an alignment for Alternative 2C that is within the established corridor as an alternative to the Proposed Route and a portion of Alternative 2A, which are outside the corridor but in the same general area. This alternative is approximately 24.4 miles long, compared to 28.4 miles for the corresponding portion of the Proposed Route.

Alternative 2C would originate at point 2a.1 and extend southwest through point 2d.1 to a connection with the Proposed Route at point 2e.4.

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

2.4.4 Segment 3 – Creston to Anticline

2.4.4.1 General Description and Issues

A double-circuit 500-kV line is proposed from the proposed Creston Substation south of Wamsutter, Wyoming, to the proposed Anticline Substation near the Jim Bridger Power Plant. Appendix A, Figure A-4 is a map for Segment 3. The line would be designed and constructed to double-circuit 500-kV standards and would be initially energized at 230 kV on one side and 500 kV on the other.

Segment 3 as proposed would use 500-kV double-circuit lattice towers between 160 and 190 feet tall (Appendix B, Figure B-3). In addition, the Proponents are considering using two single-circuit structures in place of the double-circuit structures (Appendix B, Figure B-5). The double circuit (proposed) would require a 300-foot ROW, while the two single circuits would require a 350-foot-wide ROW. Figure B-5 compares the ROW configurations for these design variations, and they are discussed in greater detail in

Section 2.1.2. This segment also includes short segments of 230 kV and 345 kV to connect to the existing Jim Bridger Power Plant Substation.

The Proposed Route would generally follow I-80 and an existing utility corridor, and portions of the Proposed Route would also fall within the WWE corridor on public lands. 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.

Of the combined total 56.5 miles of the Proposed Route (500 kV, 345 kV, and 230 kV), 15.6 miles are within the WWE corridor and 2.2 miles are parallel to the WWE corridor. Use of the full extent of the WWE corridor is not possible in this segment because of constraints presented by existing energy development. The Proposed Route follows the BLM Rawlins FO management direction to place utilities along the I-80 corridor (BLM 2008a) and the BLM Rock Springs FO management 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

The Proposed Route along Segment 3 consists of 3 sub-segments: 3, 3A, and 3B (see Figure A-4). Sub-segment 3 of the Proposed Route is 46.6 miles long, sub-segment 3A is 5.5 miles long, and sub-segment 3B is 4.3 miles long. Segment 3 (in total) parallels existing transmission lines for 42.1 miles.

Sub-segment 3 consists of a 500-kV portion of the Proposed Route, and is located between points 3, 3a, 4. It begins at the Creston Substation and proceeds west for 17 miles, at which point it turns northwest and crosses U.S. Highway 80 at MP 19.1. This 17-mile segment parallels I-80 approximately 2 to 3 miles to the south and then to the north of the Delaney Rim. Once north of I-80, sub-segment 3 stays north of this highway until it reaches the east side of the Jim Bridger Power Plant access road. In this segment, oil and gas pipelines and wells are important routing considerations. Just north of the power plant road, the 500-kV circuit turns west and proceeds for about 2.6 miles before entering the proposed Anticline Substation.

A 5.5-mile interconnecting 345-kV transmission line (subsegment 3A) would be constructed between the proposed Anticline Substation yard 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 north and then northwest on the east side of Deadman Wash. Approximately 2.5 miles north of the turn, the circuit energized at 230 kV (subsegment 3B) would leave the 500-kV line and continue for about 4.3 miles to a termination at the Jim Bridger Substation in the 230-kV yard.

No land use plan amendments would be required for the Segment 3 Proposed Route.

2.4.4.3 Alternative Eliminated from Detailed Study

Tipton Alternative (3, 3b, 4)

The Tipton Alternative was initially considered because it follows that WWE corridor more closely that 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/U.S. Highway 30 (where it also bisects the Proposed Route). This alternative then crosses to the north side of I-80/U.S. Highway 30 and continues generally west along the WWE corridor and just north of the I-80/U.S. Highway 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/U.S. Highway 30 and Bitter Creek Road.

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

2.4.4.4 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 double-circuit 500-kV line is proposed between the proposed Anticline Substation and the existing Populus Substation near I-15 in southern Bannock County, Idaho. This segment generally follows an existing transmission line corridor. The line would be constructed to double-circuit 500-kV design standards and both circuits would be energized at 500 kV. 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 double-circuit lattice towers between 160 and 190 feet tall (Appendix B, Figure B-3). In addition, the Proponents are considering using two single-circuit structures in place of the double-circuit structures (Appendix B, Figure B-5). The double circuit (proposed) would require a 300-foot-wide ROW, while the two single circuits would require a 350-foot-wide ROW. Figure B-5 compares these design variations, and they are discussed in greater detail in Section 2.1.2.

Segment 4 is 203.0 miles long and would need three optical signal regeneration sites spaced approximately equidistant along its route. Final locations for regeneration stations would be determined after the preferred alternative is identified and detailed design engineering is completed.

The major factors influencing routing decisions for this segment were:

- The existing 345-kV transmission ROW, which comprises two or three single-circuit 345-kV lines along the entire length of the segment;
- Routing constraints posed by north-south oriented NWRs (Seedskadee, Cokeville Meadows, and Bear Lake);
- Avoidance of Fossil Butte National Monument;
- Avoidance of sage-grouse core areas;
- Caribou-Targhee NF, which cannot be reasonably avoided and should be traversed within or near the existing NF utility corridor included in the Forest Plan;
- Avoidance of visually sensitive areas, including viewsheds from historic trails; and
- Use of WWE corridor where feasible.

Where practical, the proposed double-circuit 500-kV line was routed to follow the existing 345-kV circuits (with a minimum 1,500-foot centerline offset from the nearest existing line). Where the existing transmission corridor could not be followed due to resource concerns such as sage-grouse leks, oil and gas well, raptor nests, and historic trails, deviations or refinements were incorporated into the alignments.

For Segment 4, the WWE corridor generally trends in a southwest direction beginning at point 4a, while the Proposed Route must trend due west to make a connection 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. It is the only subsegment where a designated WWE corridor exists. It is approximately 52 miles west from the proposed Anticline Substation (from point 4 to 4b along the Proposed Route). The most important 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 existing transmission corridor and the WWE corridor.
- The Kemmerer Subsegment extends approximately 96 miles from the vicinity of Seedskadee NWR to the area east of Bear Lake (from point 4b to 4k). 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, Special Management Areas (SMAs), the Cokeville Meadows NWR, and big game wintering and parturition areas.
- The Montpelier Subsegment extends approximately 19 miles to the vicinity of the eastern boundary of the Caribou-Targhee NF (from points 4k to 4n). 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 9.2 miles long and extends across the NF (from point 4n to 4p). 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 lines offset from the existing 345-kV lines by the required 1,500 feet. Constraints along this approximately 9.2-mile subsegment include steep and unstable slopes, highly erodible soils, Forest Service Visual Retention and Partial Retention areas, and raptor nests.
- The Populus Subsegment continues approximately 26 miles to the Populus Substation from the vicinity of the Caribou-Targhee NF (from point 4p to 5). Localized constraints include numerous sage-grouse leks, particularly west of the Bear River; the community of 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

The proposed double-circuit 500-kV segment is approximately 203.0 miles long, extending from the proposed Anticline Substation southeast of the Jim Bridger Power Plant and partially along the existing 345-kV corridor in Sweetwater County, Wyoming, to the planned Populus Substation west of the community of Downey in Bannock County, Idaho (points 4, 4a, 4b, 4f, 4e, 4f.6, 4f.4, 4j, 4k, 4m, 4n, 4o, 4p, 5). The Proposed Route would exit the proposed substation to the west and continue parallel to the south side of the existing 345-kV corridor for about 52 miles. In this segment, the Proposed Route crosses Deadman Wash, North Baxter Basin, Killpecker Creek, and U.S. Highway 191. The route turns to the northwest for approximately 48 miles to point 4f.6, entering Lincoln County at MP 76, crossing a historic trail buffer at MP 83, passing through several miles in an oil and gas field, crucial big game winter range, sage-grouse core areas, crossing Slate Creek and associated historic trails, and passing approximately 2 miles west of Fontenelle Reservoir. At point 4f.6 (MP 90) the route turns to the west paralleling the south side of Fontenelle Creek. Constraints include VRM Class II land, crucial big game winter range, historic trails, and encroaching on one raptor nest buffer. Turning slightly to the northwest, the route passes South Fork Mountain, Commissary Ridge natural features and residents, crossing Smith Fork River and passing just south of Quealy Reservoir approximately 3 miles north of Cokeville, then crosses the Bear River.

At MP 134.3 (reference point 4f.4) the route turns to the northwest crossing Boundary Ridge and proceeding from Lincoln County, Wyoming, into Bear Lake County, Idaho, at MP 136.0. From the county line, the Proposed Route parallels the east side of the existing 345-kV corridor across Bear River at MP 140. The Proposed Route then continues west to cross U.S. Highway 30 about 2.8 miles south of the community of Montpelier.

The Proposed Route remains parallel and offset about 1,500 feet northeast of the existing 345-kV corridor crossing Bear Lake Valley, U.S. Highway 89, and the Bear River before proceeding to the eastern boundary of the Caribou-Targhee NF at MP

160. The Proposed Route crosses about 9.2 miles within the NF boundary on a new ROW north of, but offset from, the existing 345-kV line as proposed by the Forest Service. The route then rejoins the existing corridor on the west side of SR 34 crossing Mound Valley and the Bear River again.

At MP 176, the Proposed Route leaves the existing 345-kV corridor and proceeds west passing along the north side of Dry Hollow Mountain and angling northwest toward the community of Downey. About 2 miles south of Downey, the Proposed Route crosses U.S. Highway 91 and the Marsh Valley. It then continues northwest to the Populus Substation located about 1.3 miles west of Downey. The Proposed Route would be within the Greater South Pass Sage-Grouse Core Area adjacent to the existing 345-kV transmission lines. It would then cross the Seedskadee Sage-Grouse Core Area (Seedskadee Core Area) from approximately MPs 58 to 70, adjacent to existing 345-kV lines and Greenfield route from MPs 70 to 71. The route would then cross approximately 14 miles of the Fontenelle Sage-Grouse Core Area (Fontenelle Core Area) and 4 miles of the Sage Sage-Grouse Core Area (Sage Core Area) on a Greenfield route. Of its 203.0-mile length, 80.4 miles would be parallel to existing transmission lines.

The Proposed Route would neither be in conformance with the management direction provided in the Kemmerer Green River RMPs nor would it be consistent with the Caribou Forest Plan. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.5.3 Alternatives Eliminated from Detailed Study

Rock Springs Alternative (Points 4a, 4d, 4e)

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 at point 4a 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 at reference point 4e.

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 (4b, 7e)

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. From point 4b, the Southern WWE Corridor Alternative would 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 7e.

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

- Does not meet the Project's Purpose and Need, as It would not 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 the total length of the corresponding portion of the Proposed Route is 202 miles, only 2 miles are on the WWE corridor. The 30-mile advantage to following the WWE corridor on the Southern WWE Corridor Alternative would be negated by the 64 extra miles of total length of this alternative.

Consolidation/Relocation Alternatives

Figure 2.4-1 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.

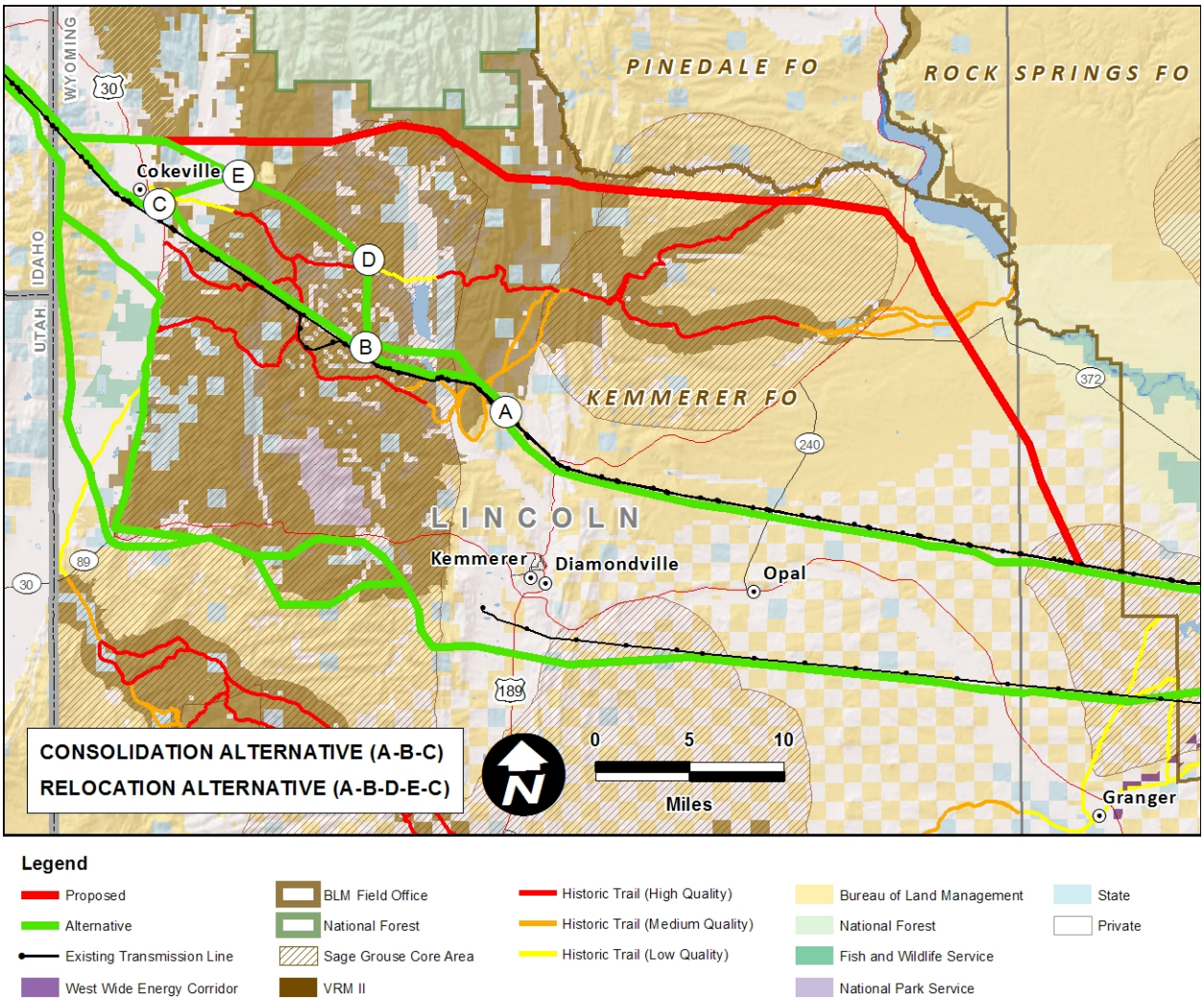


Figure 2.4-1. Consolidation/Relocation Alternatives

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 the Gateway West Project.

The Gateway West Project proposes 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 2.4-1, 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 2.4-1, 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.

Based on the reliability concerns raised by the Proponents, this alternative was eliminated from detailed analysis.

Caribou-Targhee Alternative (4n, 4p)

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 at point 4p.

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 the Proposed Route described above. The Proponents therefore shifted their Proposed Route to the route recommended by the Forest Service, and the IDT and 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.

Kemmerer Alternative A (4b, 4f, 4c, 4g, 4f.4)

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 at point 4b; however, it closely follows the Proposed Route until point 4f. At point 4f it heads west, along a path located south of the Proposed Route. It crosses the Union Pacific Railroad (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 approaching the Proposed Route at point 4g. It closely follows the Proposed Route until point 4f.4, where it rejoins this route.

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 (4b.2, 4b.9, 4b.10, 4b.11, 4b.12)

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 (point 4b.2). 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 to point 4b.12. 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 (4b, 4f, 4f.2)

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 (4b, 4f, 4f.2). 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 Alternative 4A, 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 Alternative 4A.

Montpelier Alternative (4k, 4l, 4n)

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 at 4k and follows an existing single 345-kV line northwest to reference point 4l. This alternative would proceed northwest, offset 1,500 feet from the existing 345-kV line, and pass east of the community of Montpelier. About 3 miles north of this community, the alternative route would angle west (leaving the existing 345-kV line) and cross U.S. Highway 30, the

Bear River, and the Bear River Valley before proceeding to the west to the uplands and reference point 4n, 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 U.S. Highway 30.

Populus Alternative (4p, 4q, 5)

The Populus Alternative was initially considered because it would parallel (1,500 feet to the north) an existing 345-kV route between points 4q to 5.

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.

2.4.5.4 Alternatives Studied in Detail

Alternative 4A (4b, 4f, 4e, 4f.1, 4f.2, 4g.1, 4g, 4f.4, 4j)

Alternative 4A was specifically requested by the Wyoming Office of the Governor (OGW 2009b) for further detailed analysis. This alternative is approximately 85.2 miles long, compared to 90.2 miles for the corresponding portion of the Proposed Route.

Alternative 4A is coincident with the Proposed Route from 4b to MP 68. Alternative 4A continues to follow the existing transmission lines, except for two short deviations in the vicinity of the two U.S. Highway 30/SR 89 crossings. As a result, this alternative only requires 13.0 miles of Greenfield ROW. Alternative 4A crosses the Seedskadee Core Area between MPs 58.3 to MP 67.8 where it diverges west for another 2 miles before leaving the core area. The route then crosses the Sage Core Area between MPs 53 to 70 adjacent to existing transmission lines. Of its total 85.2-mile length, it parallels existing transmission lines for 75.7 miles.

Although this alternative maximizes paralleling of the existing 345-kV route, minimizes Greenfield ROW requirements, and affects the least amount of sage-grouse core area, it would cross more historic trails, VRM Class II area, and a BLM-designated SMA.

Alternative 4A would not be in conformance with the management direction provided in the Kemmerer RMP for structures in sage-grouse habitat, four historic trail crossings, new roads near sensitive plants, and impacts to lands designated as VRM Class II. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the DEIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 4B (4b, 4b.1, 4b.2, 4b.3, 4b.4, 4b.5, 4b.6, 4b.8, 4b.12, 4b.13, 4j)

Alternative 4B is based on the route alternative originally proposed by the BLM Kemmerer 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 90.2 miles for the corresponding portion of the Proposed Route.

Alternative 4B would depart from the Proposed Route just west of Seedskadee NWR (point 4b) and head west, crossing active trona mines owned by FMC to the area south of the intersection of U.S. Highway 30/SR 89 south of Kemmerer. The alternative would depart north and west close to U.S. Highway 30/89 and in the valley close to the entrance to Fossil Butte National Monument. It would cross a small portion of a BLM-designated SRMA. Once across the Cokeville Meadows 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. North of Garret Creek, this route angles northwest at point 4b.13, across the state line into Idaho to point 4j.

Alternative 4B would comprise 70.6 miles of Greenfield route and 29.6 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 transmissions 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 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 4C (4b, 4b.1, 4b.2, 4b.3, 4b.4, 4b.5, 4b.6, 4b.7, 4b.13, 4j)

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 90.2 miles for the corresponding portion of the Proposed Route.

Alternative 4C follows the same alignment as Alternative 4B from point 4b to point 4b.6. From point 4b.6 this alternative would turn west to point 4b.7 and then north and parallel the east side of U.S. Highway 30/SR 89 and Cokeville Meadows NWR for 11.5 miles before turning northwest and crossing the highway and the NWR. At point 4b.13 the alternative turns north along the Idaho/Wyoming border for about 3.0 miles where it

would then turn northwest and rejoin the Proposed Route at point 4j. This alternative would cross the NWR north of current NWR-managed lands, although still within the established boundary. It would also cross portions of a BLM-designated SRMA along U.S. Highway 30/SR 89.

Alternative 4C would comprise 72 miles of Greenfield route and 29.6 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 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 4D (4b, 4b.1, 4b.2, 4b.3, 4b.5, 4b.6, 4b.8, 4b.12, 4b.13, 4j)

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 90.2 miles for the corresponding portion of the Proposed Route.

Alternative 4D follows the same alignment as Alternatives 4B and 4C from point 4b to point 4b.3. The alternative would modify a portion of Alternatives 4B and 4C between points 4.b3 and 4.b5 by its location farther south, thereby increasing the distance from Fossil Butte National Monument. From point 4b.5 it would follow the same alignment as Alternative 4B and rejoin the Proposed Route at point 4j.

Alternative 4D would comprise 71.2 miles of Greenfield route and 29.6 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 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 4E (4b, 4b.1, 4b.2, 4b.3, 4b.5, 4b.6, 4b.7, 4b.13, 4j)

Alternative 4E was requested by the superintendent of Fossil Butte National Monument, because most of this route is coincident with Alternative 4D. It differs from Alternative 4D by proceeding north along the east side of the Bear River Valley following an existing transmission line, while Alternative 4D crosses the river valley and proceeds north up the Utah/Wyoming then Idaho/Wyoming state lines. This alternative is approximately 102.2 miles long, compared to 90.2 miles for the corresponding portion of the Proposed Route.

Alternative 4E follows the same alignment as Alternative 4D from point 4b to point 4b.6. From point 4b.6 this alternative would turn north and follow the same alignment as Alternative 4C.

Alternative 4E would comprise 72.6 miles of Greenfield route and 29.6 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 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 4F (4b, 4f, 4e, 4f.1, 4f.2, 4f.3, 4f.4, 4f.5, 4j)

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 have fewer impacts. Therefore, the Proponents have 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 90.2 miles for the corresponding portion of the Proposed Route.

From reference point 4b to MP 68 this alternative is the same as the Proposed Route and Alternative 4A. At MP 68, Alternative 4F diverges from the Proposed Route, heading west, paralleling an existing 345-kV transmission line, entering Lincoln County at MP 19 and passing through an oil and gas well field for approximately 6 miles. The alternative continues along the south side of the 345-kV transmission line, passing approximately 5 miles north of the Hams Fork River and the town of Opal, Wyoming, over Oyster Ridge, into Pomeroy Basin, then onto Commissary Ridge. The alternative crosses the existing transmission line at MP 48.5 and two historic trails at MP 50.5. At MP 51.2, Alternative 4A separates to the south, following the existing transmission lines, and Alternative 4F remains slightly north of Alternative 4A, passing just south of Viva Naughton Reservoir. Alternative 4F then turns north for about 5 miles, crossing a historic trail (Dempsey-Hockaday Trail), then back to the northwest for about 12 miles before meeting the Proposed Route at MP 129.4. From there, the alternative is the same as the Proposed Route for the final 13 miles, to reference point 4j.

Alternative 4F would comprise 34.6 miles of Greenfield route and 52.9 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 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS

where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

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-2). 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 54.6 miles long and therefore would not need optical signal regeneration sites. There are no WWE corridors proposed 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

The proposed single-circuit 500-kV segment is approximately 54.6 miles long between points 5, 5a, 5.a.1, 5g, 5b, 5i, 5j, 5l, and 6. Two existing 345-kV transmission lines extend between the Populus and Borah Substations. The Proposed Route follows the existing lines from Populus northwest for approximately 10 miles to just southeast of reference point 5a, at which point the Proposed Route follows a Greenfield alignment for the remainder of the route, extending northwest through 5g, turning west, south of the Fort Hall Indian Reservation, and then north to the existing Borah Substation. The first part of Segment 5 crosses I-15 about 1.6 miles northwest of the Populus Substation. At MP 14.7, the Proposed Route turns west crossing the existing 345-kV corridor and then the Bannock County/Power County line. The route continues west, parallel to the proposed Populus – Cedar Hill line (Segment 7) crossing Arbon Valley and the Deep Creek Mountains south of the Fort Hall Reservation. At the west side of these mountains, the Proposed Route turns northerly between the Deep Creek Mountains and SR 37.

Proceeding north, the route crosses several drainages, generally avoiding farm land located west of the route. The route enters VRM Class II land at several points, and avoids a bald eagle nesting area in the mountains to the east. At MP 48.9 the route proceeds west crossing I-86, SR 37, and U.S. Highway 30 before crossing the Snake River and entering the Borah Substation.

From MP 32.5 north to the 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, the current Proposed Route

is located more on public land. The original portion of the Segment 5 Proposed Route remains valid for analysis, and is presented below as Alternative 5D.

The Segment 5 Proposed Route is mostly adjacent to, but offset approximately 1,500 feet from, the Segment 7 Proposed Route from reference point 5 to 5d. Of its total, the Proposed Route would be Greenfield for 40.8 miles and parallel to existing transmission lines for 13.8 miles.

The Proposed Route would not be in conformance with the management direction provided in the Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.6.3 Alternatives Eliminated from Detailed Study

Deep Creek Alternative A (5, 5a, 5d)

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 9.3, 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, rejoining the Proposed Route at reference point 5d (MP 37), approximately 4 miles northeast of Rockland.

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 (5b, 5e)

Deep Creek Alternative B was initially considered because it was a more direct route between points 5b and 5e, compared to the Proposed Route. It diverges from the Proposed Route at reference point 5b (MP 28.3) and extends northwest through the Deep Creek Mountains, terminating at reference point 5e (Proposed Route MP 42.2).

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 (5, 5n, 8; 5, 5n, 5o, 8) 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. Alternative 5, 5n, 5o, and 8 through the Monument and Preserve was determined to not be feasible, as it would require Congressional approval, while Alternative 5, 5n, and 8 that went around the Monument and Preserve would be at least 50 miles longer than the Proposed Route. Even if these conditions did not exist, these alternatives do not meet the Proponents' purpose and need 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.

2.4.6.4 Alternatives Studied in Detail

Alternative 5A (5.a.1, 5x, 5c, 5k, 5j)

Alternative 5A was routed to eliminate the crossings of VRM Class II lands and avoid high-quality forested habitat on BLM-managed land in the northern portion of the Deep Creek Mountains. This alternative is approximately 33.7 miles long, compared to 25.3 miles for the corresponding portion of the Proposed Route.

This alternative would diverge from the Proposed Route near Hawkins Creek (5a.1) and head due west for 4.8 miles to Hawkins Reservoir. It would then turn in a southwesterly direction and proceed through the very northern portion of Oneida County, continue just north 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 makes a short turn to the northeast before meeting the Proposed Route at Point 5j. This alternative would impact more private land than the Proposed Route. The entire route would be Greenfield.

Alternative 5A would not be in conformance with the management direction provided in the Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed.

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

Alternative 5B (5.a.1, 5x, 5f, 5c, 5k, 5j)

Alternative 5B was routed to eliminate the crossings of VRM Class II areas and avoid high-quality forested habitat on BLM-managed land in the northern portion of the Deep Creek Mountain. This alternative is approximately 44.4 miles long, compared to 25.3 miles for the corresponding portion of the Proposed Route.

This alternative would diverge from the Proposed Route near Hawkins Creek (5a.1) and head due west for 4.8 miles to Hawkins Reservoir. It would then turn in a southwesterly direction and proceed southwest to just north of the town Buist at MP 22. At that point it turns west, traverse the Deep Creek Mountains and then heads north through the Rockland Valley, before rejoining Alternative 5C at point 5c. The entire route would be Greenfield.

Alternative 5B would not be in conformance with the management direction provided in the Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 5C (5g, 5l)

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 utility corridor for most of the segment length and has more gentle terrain and less visual impacts. This alternative is approximately 26.1 miles long, compared to 33.2 miles for the corresponding portion of the Proposed Route.

The alternative would depart from the Proposed Route at point 5g. From that point, it would traverse to the northwest for 12.4 miles through the Fort Hall Indian Reservation. West of the reservation it would cross primarily private lands before rejoining the Proposed Route at point 5l. The entire length of this route would be adjacent to an existing transmission line. Power County has formally endorsed this route (Power County 2009a).

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

Alternative 5D (5i, 5d, 5e, 5h, 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 17.5 miles long, compared to 19.4 miles for the corresponding portion of the Proposed Route.

Alternative 5D is located 1 to 2 miles west of the Proposed Route. At MP 35.2 the route proceeds west for approximately 2 miles before turning north at the East Fork Rock Creek, about 3 miles east of Rockland, Idaho. The alternative proceeds north and slightly west for about 12.5 miles through predominantly private farmland. The alternative then turns to the northwest, 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 at the request of Power County, which requested 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.

Alternative 5E would begin at reference point 5l and proceed northwest for approximately 0.4 mile before crossing over 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-2). 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 re-terminated 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. 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. 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 amendment 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 118.1-mile single-circuit 500-kV transmission line is proposed between the Populus Substation and the proposed Cedar Hill Substation near the county line between Cassia and Twin Falls Counties in Idaho. The line would be constructed utilizing 500-kV single-circuit lattice steel towers between 145 and 180 feet tall (Appendix B, Figure B-2). 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, rural residences, a local hang gliding area, visual resources, NHTs, cultural resources, big game winter range, sage-grouse key habitat, Designated Roadless Areas, and local county planning goals.

There are no existing east-west transmission lines or WWE corridors proposed 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 an adjacent corridor to the one created by the Proposed Route. This concern, combined with concerns over 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 is designated in this EIS as Alternative 7I. A variation of 7I, designated as Alternative 7J, was identified by Cassia and Twin Falls Counties. It would expand Alternative 7I by creating a new substation (the Rogerson Substation), approximately 24 miles southwest of the Cedar Hill Substation (point 9.a.6). Cassia County has modified its comprehensive plan to provide that new high-voltage power lines follow either 7I or 7J (Cassia County 2009). In response to the State Line Route,

the Proponents identified Alternative 7H as a means of addressing agricultural impacts and asked that it be considered in detail in the EIS.

Because Segment 7 is 118.1 miles long, it would need two optical signal regeneration sites along its route. Final locations for regeneration stations would be determined after the preferred alternative is identified and detailed design engineering is completed.

2.4.8.2 Proposed Route 7

The proposed single-circuit 500-kV line route (points 5, 7a.0, 7b.0, 7c, 7d, 7e, 7v,7g, 7h, 7j, 7j.1, 7k,7l, 7y, 7m.1, 7t, 7s, 7s.3, 7s.1, 7z, 9) would extend from the expanded Populus Substation about 12.7 miles along the east side of the existing 345-kV lines before turning west and crossing the existing lines south of Cedar Mountain. It generally parallels the south side of the existing 345-kV corridor around Hawkins Reservoir, turning northwest before turning west and leaving the existing transmission corridor and passing along the south side of Pauline. From there, the Proposed Route continues west across the Arbon Valley and the Deep Creek Mountains before crossing SR 37 less than 1 mile south of Rockland at MP 40.6. This segment continues west another 7 miles to point 7d, at the eastern foot of the Sublett Range.

From this point it crosses into Cassia County and then proceeds across the Raft River Valley, where it turns southwest along the western toe of the Albion Mountains before angling west for about 22 miles across an area of extensive irrigated cropland and dairy operations. Of its 118.1-mile length, the Proposed Route would be Greenfield for 102.4 miles and parallel existing transmission lines for 15.6 miles.

The Proposed Route would not be in conformance with the management direction provided in the Cassia RMP and Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

2.4.8.3 Alternatives Eliminated from Detailed Study

Deep Creek Alternative (5, 7b, 7d)

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 (MP 21.8).

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

- Crosses 2.5 miles of NFS land, 0.8 mile of which is a Forest Service Visual Retention Area;
- Crosses areas designated as BLM VRM Class II;
- 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 (7e, 7u, 7g)

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.

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 pivots. 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 (7m, 7p, 7o, 7q, 7t, 7s)

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 at point 7m, 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 at MP 109, just southeast of Artesian City at point 7s.

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 (7m, 7p, 7q, 7t, 7s)

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 point 7m, 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, just southeast of Artesian City at Point 7s.

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 (7j.1, 7x, 7n, 7s)

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 point 7j.1, 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 at point 7s, at the north end of the Sawtooth NF.

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 (7g, 7i, 9g, 9h)

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 (Appendix A, Figures A-9 and A-11), and diverges from the Proposed Route at point 7g 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 it reaches point 7i, 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 U.S. Highway 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 at reference point 9h (Appendix A, Figure A-11) approximately 5 miles west of the Twin Falls/Elmore County line.

The segment between point 7g and 9h 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 (7g, 7i, 9). This route would turn at point 7i and proceed due south to the Cedar Hill Substation.

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 proposed 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. Descriptions and comparisons of the proposed alternatives are presented below.

Malta Bypass Alternative 1 (7c.4, 7g.1, 7g.2)

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 (point 7r) 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 (point 7g.2).

This alternative was eliminated from detailed study 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. This area has long been recognized as a regionally, perhaps nationally, significant area for nesting ferruginous hawks (Moulton 2007); and
- 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.

Malta Bypass Alternative 2 (7g, 7g.1, 7g.2, 7q.1, 7s.3)

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 point 7g, MP 71.9. This is 71.9 miles west of the proposed beginning of Alternative 7H, at Populus Substation, and 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. The new portion of this alternative would end at point 7g.2 on the current Alternative 7H. From there, Alternative 7H would continue for approximately 43 miles to the west to Cedar Hill Substation, following the original western alignment of Alternative 7H.

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
- Does not fulfill the Proponents' intent because it leaves no alternative to the eastern portion of Alternative 7I except the Proposed Route. The Proponents have proposed Alternative 7H as an alternative to the Southern Idaho Task Force preferred Alternative 7I.

Foothills Alternative (7j.1, 7x, 7y)

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 at point 7j.1, where it heads west to point 7x. It then heads south, generally following the Proposed Route (somewhat west of the Proposed Route), until rejoining the Proposed Route at point 7y.

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 (7d, 8)

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 2.4-2 shows the conceptual path of 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.

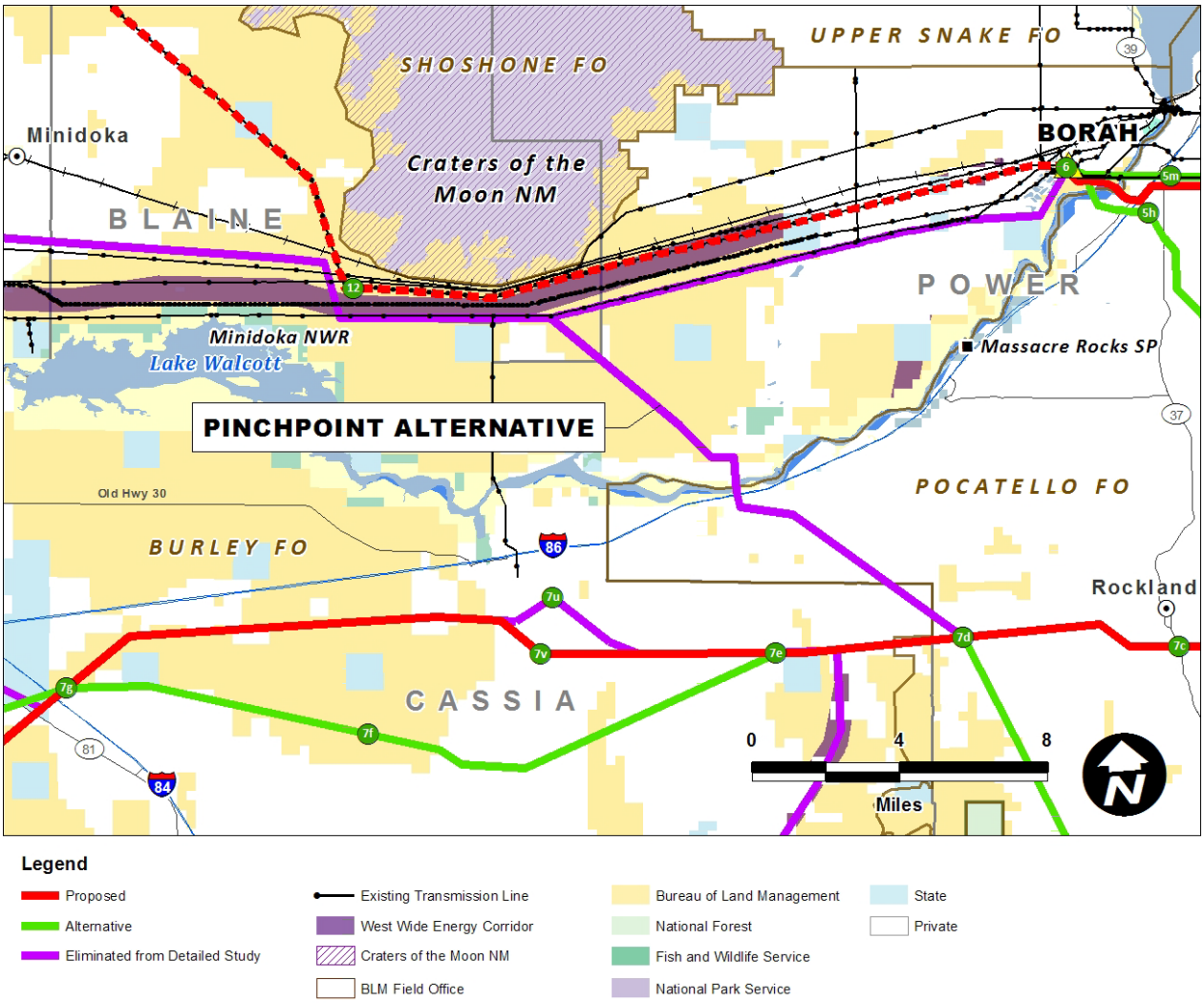


Figure 2.4-2. Pinchpoint Alternative

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.

2.4.8.4 Alternatives Studied in Detail

<u>Alternative 7A (7b.o, 7b.1, 7b, 7d)</u>

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 (note that

selecting the Deep Creek Alternative along either Segment 5 or Segment 7 would require the selection of the Deep Creek Alternative along the other Segment). This alternative is 38.0 miles long, compared to 35.2 miles for the corresponding portion of the Proposed Route.

The Segment 7 Deep Creek Alternative would head due west from point 7a.0 for 4 miles near, but outside, the boundary of the Caribou-Targhee NF. This portion of the NF is an Inventoried Roadless Area (IRA). From this point the route would proceed about 7 miles through the very northern portion of Oneida County. At the border of Power County, it would continue southwest, cross Bannock Creek, pass just north of Arbon in the Arbon Valley, then traverse the Deep Creek Mountains for approximately 8 miles. On the west side of the Deep Creek Mountains it would head northwest through Rockland Valley, cross SR 37, the South Fork of Rock Creek, Cedar Ridge, and Houtz Canyon, and continue for 3 miles to a location 5 miles west of Rockland where it would rejoin the Proposed Route at 7d. The entire route would be Greenfield.

Alternative 7A would not be in conformance with the management direction provided in the Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 7B (7b.0, 7b.1, 7a.2, 7a.1, 7b, 7d)

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. This alternative is 46.4 miles long, compared to 35.2 miles for the corresponding portion of the Proposed Route.

This alternative diverges from Alternative 7A at point 7b.1. From this point it heads southwest and west of the boundary of the Caribou-Targhee NF. At mile 25, it enters Power County and continues southwest west crossing the South Fork and the Deep Creek Mountains. On the west side of the Deep Creek Mountains, this alternative heads northwest through Rockland Valley, crosses SR 37, and intersects with the feasible Alternative 7A at point 7b. The entire route would be Greenfield.

Alternative 7B would not be in conformance with the management direction provided in the Malad MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 7C (7e, 7f, 7g)

Alternative 7C was identified as a feasible alternative because it is constructible, and it is similar to the Proposed Route in environmental impacts. 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 7e, approximately 10 miles west of Rockland, Idaho. The Proposed Route and Alternative 7C are both 20.3 miles

long. Alternative 7C runs southwest through the Sublett Range for approximately 8 miles. It then proceeds west for 2 miles through Heglar Canyon and northwest through the Raft River Valley for 11 miles, terminating at MP 21 where it rejoins the Proposed Route. This alternative swings south of the Proposed Route to avoid three sage-grouse lek 0.65-mile buffers along the Proposed Route and be farther from the "Parting of the Ways" where the California and Oregon NHTs diverge. The entire route would be Greenfield.

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

Alternative 7D (7g, 7w, 7h)

Alternative 7D was identified to avoid a BLM-managed area that does not allow new ROWs. This alternative is 6.8 miles long, compared to 6.2 miles for the corresponding portion of the Proposed Route.

The Proposed Route between points 7g and 7h passes through a portion of BLM-managed land that does not allow new ROWs without modification to the Cassia RMP. Alternative 7D passes northwest of the Proposed Route and avoids the BLM-managed land; however, it is closer to the Oregon NHT. The entire route would be Greenfield.

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

Alternative 7E (7j, 7j.2, 7l)

Alternative 7E diverges slightly east from the Proposed Route to avoid two sage-grouse lek 0.65-mile buffers and to stay east of a hang gliding launch location. 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 equivalent segment of the Proposed Route at point 7j, approximately 4.5 miles north of Albion. It proceeds southeast for about 1 mile and then southwest for about 3 miles back to the Proposed Route. The entire route would be Greenfield.

Alternative 7E would not be in conformance with the management direction provided in the Cassia RMP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources amendments.

Alternative 7F (7h, 7j.2, 7m.1)

Alternative 7F was identified to avoid locating the Project in the foothills of the Albion Mountains, where scattered residential developments occur. 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 two sage-grouse lek buffers, four raptor nest buffers, and

passes through 10.7 miles of big game winter range. The entire route would be Greenfield.

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

Alternative 7G (7s.1, 7s.2, 7z)

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). Immediately adjacent to the boundary of the restricted area is a CAFO. This alternative is 3.2 miles long, compared to 3.1 miles for the corresponding portion of the Proposed Route. The entire route would be Greenfield.

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

Alternative 7H (5, 7a.0, 7b.1, 7a.2, 7r.1, 7q.1, 7s.3, 7s.1, 7z, 9)

This 127.4-mile alternative provides a route that avoids siting the line in proximity to some of the CAFOs and center pivot irrigation facilities located near the Proposed Route. This alternative is 127.5 miles long, compared to 118.1 miles for the corresponding portion of the Proposed Route.

This alternative is the same as Alternative 7I for the first 65.2 miles (point 7r.1). From there, Alternative 7H proceeds to the west, into the Raft River Valley, where two raptor nest buffers and one sage-grouse lek buffer are crossed. Power County endorses the portion of Alternative 7H between points 5, 7a.0, 7b.1, and 7a.2. Portions of this alternative pass through the Raft River-Curlew Valley IBA for ferruginous hawks between MPs 58.2 to 66.4 and 72.0 to 75.9. The alternative continues into the Jim Sage Mountains, the Elba Basin, and the Albion Mountains. The alternative is within the Sawtooth NF from MP 87.6 to 92.0, then re-enters agricultural land passing south of Oakley, Idaho, turning northwest then north before meeting the Proposed Route at point 7s.3 and continuing west into the proposed Cedar Hill Substation.

This alternative is studied in detail although it would cross the Sawtooth NF for 12.1 miles, in multiple locations, most of which is high-quality habitat, and the alternative would be all Greenfield. Also, this alternative would result in substantially more impacts to raptors and sage-grouse compared to the Proposed Route. Overall, this alternative would result in measurably more environmental effects than the Proposed Route. However, the Proponents consider this alternative as superior to Alternative 7I. Of its 127.5-mile length, 116.5 miles would be Greenfield and 11.0 miles would parallel existing transmission lines.

Alternative 7H would neither be in conformance with the management direction provided in the Cassia RMP nor would it be consistent with the Sawtooth Forest Plan. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the

proposed amendment and Appendix G provides the analysis and rationale for visual resource amendments.

Alternative 7I (5, 7a.0, 7b.0, 7b.1, 7a.2, 7r.4, 7r.1, 7r.2, 7r.3, 9)

Substantial landowner opposition has been raised to the Proposed Route in Segment 7 due to potential impacts to agricultural land in Cassia County. Through a lengthy process of meetings and correspondence, a multi-county task force (local landowners) was formed consisting of representatives from Bannock, Oneida, Power, Cassia, and Twin Falls County governments and interested landowners. Input was received from local Idaho state legislators, and the states of Utah and Nevada were contacted with the goal of providing an alternative route. Alternative 7I, or the State Line Route as it is commonly called, is the route recommended by this task force (Cassia County 2009). This alternative is 173.4 miles long, compared to 118.1 miles for the corresponding portion of the Proposed Route.

From the Populus Substation, this alternative is coincident to the Proposed Route for the first 9.2 miles (point 7a.0). It then proceeds to the west, crossing into Oneida County at MP 14.0 and turns southwest at MP 15.2 crossing the Pleasantview Hills, the Arbon Valley, and into the Deep Creek Mountains. At MP 32.9, Alternative 7I turns west and is located along the Power County/Oneida County line through the southern portion of the Rockland Valley and into the Sublette Mountain Range. At MP 45.9, the alternative enters the Sawtooth NF, turning southwest and crossing into Cassia County at MP 52.2. At MP 55.8, the alternative turns west again, crossing I-84 at MP 57.7 and passing through several raptor nest buffers. Much of this alternative passes through the Raft River-Curlew Valley IBA for ferruginous hawks between MPs 58.3 to 72.0, 75.2 to 75.4, and 85.9 to 97.2. At MP 65.2 (point 7r.1), the alternative turns to the southwest, then west passing along the east side and then south side of the Raft River Valley. The alternative crosses the Salt Lake Alternative of the California NHT at MP 82.6, crosses several more raptor nest buffers and comes within 1 mile of Utah in the Cedar Hills at MP 98.2. This portion of the alternative passes just south, but within the viewshed, of the City of Rocks National Reserve. Continuing west, the route enters Junction Valley and re-crosses the California NHT three different times at MPs 103.8, 111.9, and 114.9. The alternative enters the Albion Mountains and the Sawtooth NF at MP 121.0, and dips into Elko County, Nevada, between MPs 122.3 and 129.5 to avoid a designated roadless area in the Sawtooth NF. The alternative re-enters the NF as it re-enters Idaho, eventually turning north and leaving the NF at MP 152.6, and proceeding to a WWE corridor at MP 155.3 (point 9a.1). From here, the alternative follows the WWE corridor and an existing 345-kV transmission line to the northeast, past point 9.a and into the proposed Cedar Hill Substation. Of its 173.4-mile length, 144.6 miles would be Greenfield and 28.8 miles would parallel existing transmission lines.

Alternative 7I would neither be in conformance with the management direction provided in the Cassia and Wells RMPs and Twin Falls MFP, nor would it be consistent with the Sawtooth Forest Plan. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resource amendments.

Alternative 7J (5, 7a.0, 7b.0, 7b.1, 7a.2, 7r.4, 7r.1, 7r.2, 7r.3, 13 + 13, 9a.6 + 9, 9a.1, 13)

Local landowners opposed the Proposed Route between Populus and Cedar Hill Substations because 63 percent of this route would be located on private land, much of which is currently used for agricultural purposes. Their preferred route along this portion of the Project is Alternative 7I (as described above). On June 23, 2010, the Twin Falls County Commissioners formally requested that BLM include a proposed realignment for the west end of Alternative 7I, identified here as the Rogerson-Hollister Alternative (Twin Falls County 2010a).

Alternative 7J incorporates all of Alternative 7I from the Populus Substation to point 7r.3, where Alternative 7J would replace the remainder of Alternative 7I. At MP 137.2 (point 7r.3), Alternative 7J would turn west then northwest for approximately 16.6 miles across Shoshone Basin. At point 13, Alternative 7J would cross an existing 345-kV transmission line and the proposed Southwest Inter-tie Project (SWIP; a proposed 500-kV transmission line currently approved but not constructed at this time). The Task Force proposes that the Cedar Hill Substation be moved to this junction, a move of about 24 miles southwest from its current proposed location at point 9. From point 13, Alternative 7J would branch in two directions: one line would continue northwest for approximately 8 miles, then turn north within a WWE corridor to meet Proposed Segment 9 at point 9a.6. The second line would proceed for approximately 10 miles back to the WWE corridor at point 9a.1, continuing to the east along the Alternative 7I alignment, into the current location of the proposed Cedar Hill Substation. Total length of Alternative 7J is 202.1 miles.

Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The tables and discussion in this document compare 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Alternative 7J would neither be in conformance with the management direction provided in the Cassia and Wells RMPs and Twin Falls MFP, nor would it be consistent with the Sawtooth Forest Plan. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resource amendments.

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 Midpoint Substation and the 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-2). Appendix A, Figure A-10 shows the proposed Segment 8 route. The Proposed Route is about 131.0 miles long and therefore two optical signal regeneration sites, about 40 to 50 miles apart, would be needed along the route but their locations have not yet been proposed.

Key factors considered in routing this segment included using the WWE corridor where possible, conflicts with agricultural lands, residential development, visual resources, SRBOP, Halverson Bar and Wees Bar Non-motorized Areas, Guffey Butte-Black Butte Archaeological District, and the IDANG Orchard Training Area. The Proposed Route is within the WWE corridor for 38.1 miles out of its total 131.0-mile length.

2.4.9.2 Proposed Route

The 131.0-mile-long Proposed Route (points 8, 8a, 8b, 8c, 8c.1, 8c.2, 8q, 8r, 8r.1, 8r.3, 9t, 9v, 11) proceeds west-northwest, passing just north of the juncture of the Jerome, Lincoln, and Gooding County lines near MP 9. Between points 8 and 8c.1, the Proposed Route would be located immediately adjacent to an existing 230-kV line. This route continues in the same direction, passing between Gooding and Wendell before crossing the Malad River at MP 19.3. South of Pioneer Reservoir, the route angles northwest crossing the Gooding County/Elmore County line at MP 36.1. Between MPs 45.3 to 47.6 and 49.9 to 50.7, the Proposed Route would cross VRM Class I in an area of multiple transmission lines. At MP 58, the route parallels the existing PacifiCorp 500-kV line offset 1,500 feet to the south and west for reliability reasons. It crosses U.S. Highway 20 at MP 67.5 and turns west, crossing I-84 at MP 89.4 and the Elmore-Ada County line at MP 89.9. Continuing west, the Proposed Route is located approximately 1,500 feet south of the existing Summer Lake to Midpoint 500-kV transmission line through the SRBOP.

The route enters the SRBOP at MP 97.8 and continues to the west, then southwest through Ada County. A 4.7-mile segment of the route passes through a portion of the Alpha Maneuver Sector for the IDANG, which is located in the SRBOP. IDANG has requested that this area be avoided if possible. Alternative 8D provides an avoidance route, as described below. At MP 116, the route turns more to the south and crosses the Snake River between MPs 117 and 119. The Snake River in this area comprises the Ada-Owyhee County line. In this same general area the Proposed Route would cross the Halverson Bar and Wees Bar non-motorized areas and Guffey Butte-Black Butte Archaeological District. The route continues southwest, then west around Guffey Butte through Owyhee County before intercepting a WWE corridor and turning northwest at MP 123.6. The route leaves the SRBOP at MP 125.8 before ending at the proposed Hemingway Substation. Of its 131.0-mile length, 13.9 miles would be Greenfield and 117.1 miles would 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. In addition, the Proposed Route would not be in conformance with the management direction provided in the Bennett Hills/Timmerman and SRBOP RMPs and the Kuna MFP. An amendment would be needed to allow the Proposed Route to be constructed within this non-motorized area; however, the Boise District BLM office has stated that the RMP could not be amended in this way to meet objectives. Alternative 8E would avoid this area. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS

where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

2.4.9.3 Alternatives Eliminated from Detailed Study

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. The BLM IDT decided not to carry these routes forward for detailed analysis. A scoping comment suggested co-location of the Proposed Route with planned realignment and upgrading of Kuna–Mora Road in the vicinity of points 8h to 8j. 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 (8s, 8g, 8p, 11)

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 (at point 8s) all the way east to a termination at the Hemingway Substation (point 11).

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 (8, 8c, 8c.1)

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 at reference point 8c, approximately 4 miles northwest of King Hill. No attempt was made to follow I-84 from point 8c north 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;

- Does not follow the WWE corridor;
- Is parallel to existing transmission lines for less of its' length compared to the Proposed Route (24.3 miles less);
- Impacts 7.1 miles more areas within scenic U.S. Highway 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 (8, 8a, 8c, 8c.1)

This alternative is a slight variation of the previously discussed alternative (i.e., I-84 North Alternative). This option diverges from the Proposed Route at point 8a 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. 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 (8c.1, 8d, 8e, 8f, 8o)

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 point 8c.1, and continues northwest, parallel to the Proposed Route and an existing transmission lines, and follows the WWE corridor. It rejoins the Proposed Route at a location a few miles east of Indian Creek Reservoir in the vicinity of point 8o.

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 (within the draft WWE corridor), whereas the Proposed Route would cross none; and
- Crosses 0.3 mile more irrigated agriculture than the Proposed Route.

Blair Trail Alternative (8c, 8d, 8e, 8f, 8o)

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.

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 (8, 8e, 8c.2)

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 (point 8) 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, at point 8c.2.

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 Area of Critical Environmental Concern (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 (8b, 8e, 8f, 8o)

The King Hill Alternative was routed to reduce impacts to historic trails and sage-grouse leks, the King Hill wilderness study area (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 at point 8b 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.

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

- Does not follow the final WWE corridor;
- 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 Alternative (8b, 8f, 8o)

The Bennett Hills Alternative was designed to minimize impacts to historic trails. This alternative route diverges from the Proposed Route at point 8b 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.

A variation of the Bennett Hills Alternative was also considered in which the alternative began at Midpoint Substation (point 8) 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 (8h, 8i, 8j, 8l, 8n, 11)

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 at point 8h 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 rejoining Alternative 8B at point 8j. 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 points 8j and 8l 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 points 8l and 8n 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 points 8n and 11 is 0.8 miles 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.

2.4.9.4 Alternatives Studied in Detail

Several feasible alternatives were identified—one that follows the WWE corridor from Midpoint to point 8c.1, and a group of alternatives to the Proposed Route near McElroy Butte, a route to avoid sensitive cultural resources, and another to minimize impacts to the IDANG Orchard Training Area. 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.

Alternative 8A (8, 8c.1)

Alternative 8A was developed to route the Project within or parallel to the WWE corridor or projected WWE corridor along its full extent. This alternative is 53.6 miles long, compared to 51.4 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. At the Gooding/Twin Falls County line (MP 26.6), it would cross the Snake River and continue west to the Twin Falls/Elmore County line (at MP 31.2). There, it would begin heading northwest, and beginning at MP 36.2, join an existing transmission corridor. It would parallel the Snake River within approximately 0.5 mile in some locations, crossing Black Mesa and then the Snake River again at MP 46.5 just north 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, about 1 mile west of Alkali Creek. 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. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 8B (8q, 8r, 8s, 8g, 8h, 8j, 8k, 8l, 8m, 8n, 8p, 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. To that end, the Proponents have now proposed a route that avoids 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 of the Proposed Route in Elmore County. It proceeds northwest along the alignment of the Proposed Route to MP 90.5. It then continues northwest for another 1 mile before turning west and northwest adjacent to an existing low voltage transmission line for about 6 miles, where at MP 23.3 it turns west across the railroad and proceeds through a developing area, which includes 0.75 mile within the city of Kuna, existing and planned subdivisions, and BLM-managed lands currently under consideration for inclusion in the SRBOP. From this point, it proceeds along the north side of Kuna Butte before turning generally southwest passing south of Power Butte and McElroy Butte and north of the community of Melba. Between points 8k and 11, the Proposed Route would be located adjacent to roadways and in proximity to residences. At MP 39.8 it crosses U.S. Highway 45 and then the Snake River before entering the expanded Hemingway Substation at MP 45.6. Of its 45.8-mile length, 12.9 miles would be Greenfield and 32.9 miles would parallel existing transmission lines.

Alternative 8B would not be in conformance with the management direction provided in the SRBOP RMP and the Kuna MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 8C (8q, 8o, 8s)

Alternative 8C was originally a portion of the Proposed Route. It was changed to an alternative in this area because it is close to 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.

It proceeds northwest along the WWE corridor, then west back to the Proposed Route. This alternative would parallel an existing transmission line for its entire length.

Alternative 8C would not be in conformance with the management direction provided in the Kuna MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed.

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

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

Consultation with the IDANG indicates their preference for the line to avoid a portion of the Alpha Maneuver Sector of the Orchard Training Area. 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.

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 and the Kuna MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 8E (8r.4, 9r.4, 9r.5, 8r.5)[7]

Alternative 8E was proposed by BLM to avoid the Halverson Bar and Wees Bar Non-motorized Areas and the high density of sensitive cultural sites crossed by the Proposed Route in the Guffey Butte-Black Butte Archaeological District (often referred to as the Guffey Butte-Black Butte Historic District) south of Guffey Butte. The portion of the Proposed Route that crosses the north end of the Guffey Butte-Black Butte Archaeological District and the Snake River would be located within an area designated by the BLM as Non-Motorized (i.e., no vehicle travel allowed). The Guffey Butte-Black Butte Archaeological District was listed on the NRHP in 1978 to protect over 200 known prehistoric sites in the area (BLM 2008b). Alternative 8E was sited in consultation with the BLM and would avoid this Non-Motorized land designation and minimize the impacts to cultural sites. This alternative is 18.5 miles long, compared to 7.0 miles for the corresponding portion of the Proposed Route.

Alternative 8E would leave the Proposed Route at point 8r.4 (between MPs 113 and 114), proceeding south, following an existing 138-kV transmission line for approximately 8.2 miles. The route would turn to the west-southwest, following an existing transmission line, through the Guffey Butte-Black Butte Archaeological District and crossing the Snake River south of Swan Falls and Sinker Butte. On the west side of the river, the route would turn to the northwest then west before rejoining the Proposed Route at point 8r.5. The portion of Alternative 8E located west of the Snake River would follow the same route as portions of Alternatives 9D and 9F. However, both

[7] 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 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 and the Kuna MFP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

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-2). Appendix A, Figure A-11 provides details on the transmission line route between the Cedar Hill and Hemingway Substations.

Segment 9 is 161.7 miles long and therefore would need two optical signal regeneration sites along its route. Final locations for regeneration stations would be determined after the preferred alternative is identified and detailed design engineering is completed.

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 Wild and Scenic River (WSR).

In the Magic Valley, the Proposed Route is within or parallel to the WWE corridor for 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 or parallel to the 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 or parallel to the WWE corridor for 48.0 miles out of a total Proposed Route length of 52.4 miles. In total, Segment 9 utilizes 78.4 miles of WWE corridor.

2.4.10.2 Proposed Route

The 161.7-mile-long Proposed Route (points 9, 9a, 9a.2, 9a.3, 9a.4, 9a.5, 9a.6, 9c.1, 9e.1, 9e.2, 9h, 9i, 9k, 9m.1 9n, 9l, 9m, 9p, 9w, 11) for the single-circuit 500-kV line proceeds generally west through public and private rangeland. The route continues west about 1 mile south of Twin Falls Military Reservation, and crosses U.S. Highway 93 at MP 17.7. At MP 28.6 the route turns northwest to parallel the east side of Salmon Falls Creek adjacent to an existing 138-kV transmission line for about 4.4 miles before turning west at MP 32 and crossing the Salmon Falls Creek ACEC at Lillie Grade just north of the Salmon Falls Creek WSA (Point 9a.5) but still part of an ACEC and eligible WSR. (The BLM has stated that if cannot approve a route that crosses an eligible WSR). Several raptor nest buffers are crossed as the route continues northwest through the Bruneau Desert. At MP 46.6, the route turns to the north along the Twin

Falls/Owyhee County border for about 10 miles before turning to the northwest and crossing into Owyhee County at MP 55.8, then into Elmore County at MP 63.4. Between MPs 91.2 and 95.8 the Proposed Route would be just inside the east boundary of the general Jarbidge Military Operating Area. Within the general Military Operating Area, the height of the transmission 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 and this minor encroachment is acceptable (Postema 2010).

The Proposed Route enters the SRBOP at MP 88.0. Between this point and MP 96.8, a distance of the route would be outside the designated WWE corridor to avoid cultivated agricultural fields at the request of Owyhee County. The Proposed Route would pass through the Saylor Creek Air Force Range restricted area and to the south of Bruneau Dunes State Park in the vicinity of MPs 93 to 97. 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 Operating Area and just to the south of Bruneau Dunes State Park is acceptable. From this point, the Proposed Route proceeds generally southwest across the Bruneau River Valley.

On the west side of this valley the route turns northwest, crosses SR 51, and then continues northwesterly on the southwest side of the Bruneau River, then the Snake River and SR 78. In this portion, 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 intercepts the SRBOP between MPs 142.4 and 146.2 within the WWE corridor and continues north and west into the Hemingway Substation at MP 161.7.

The Proposed Route would not be in conformance with the management direction provided in the Jarbidge and SRBOP RMPs and the Twin Falls and Bruneau MFPs. In addition, it is not in conformance with the Eligible WSR designation for this segment of Salmon Falls Creek. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F discusses the proposed amendment and Appendix G provides the analysis and rationale for visual resources. 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 Eliminated from Detailed Study

Magic Valley Alternative (9, 9e, 9e.1, 9f, 9h)

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), and is in proximity to 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, crosses Salmon Falls Creek, and reaches reference point 9e.

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 at reference point 9h.

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 only 0.9 mile, compared to 15.0 miles for the Proposed Route;
- Parallels existing transmission lines, whereas the Proposed Route does so for 25.0 miles;
- Passes through 29.3 more miles of irrigated agricultural lands (primarily center pivot);
- 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 (9i, 9j, 9l)

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 slightly from the Proposed Route, beginning at point 9i heads 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 was not; and
- The final WWE corridor was moved to follow the Proposed Routes alignment in this area, by agreement with all adjacent and affected land-managing agencies.

Magic Valley-Saylor Creek Alternative (9b, 9m)

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 at MP 107.5 (point 9m).

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

- Is entirely a Greenfield route;
- Is not within the WWE corridor;
- Crosses 3.6 miles of the Bruneau-Jarbidge Rivers Wilderness Area associated with the Bruneau River in Bruneau Canyon;
- 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;
- Crosses 0.6 mile of historic trail buffer; and
- Would be within a Military Operating Area for most of its length, which limits obstructions to under 100 feet.

Blue Ridge Alternative (9c.1, 9f)

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 (9p, 9t, 9v, 11)

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, onto points 9t, 9v, and 11. 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 (9m, 9r, 11)

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 point 11.

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.

I-84 South Alternative (7g, 7i, 9g, 9h)

The analysis leading to the conclusion that the I-84 South Alternative should not be carried forward is addressed earlier in Section 2.4.8.3.

2.4.10.4 Alternatives Studied in Detail

Alternative 9A (9a, 9a.3)

Alternative 9A was originally identified by the Proponents as the Proposed Route. The BLM representatives and the Proponents identified a new route that has been adopted by the Proponents as proposed, based on consultation between local landowners and residents concerned about impacts to irrigated agriculture and dairies. 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 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. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the DEIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9B (9a.5, 9b, 9c, 9d, 9e, 9g, 9h)

Alternative 9B was developed to follow a nearby WWE corridor and to parallel existing utility corridors. This alternative is 53.2 miles long, compared to 49.5 miles for the corresponding portion of the Proposed Route.

Alternative 9B would depart from the Proposed Route about 5 miles south of Castleford (point 9a.5) and rejoin the Proposed Route just west of the Owyhee/Elmore County line about 3 miles south of the Snake River at point 9h. This alternative would diverge from

the Proposed Route by continuing to follow an existing transmission line parallel to the west side of Salmon Falls Creek at a distance ranging between 1 to 4 miles. It would then turn northwest, continue to parallel an existing transmission line on the southwest side of the Snake River before crossing the Twin Falls/Elmore County line at MP 29.5. At point 9g, the route would turn due west, crossing Rosevear Gulch and then Deadman Flat before rejoining the Proposed Route just west of the Owyhee/Elmore County line at point 9h.

Alternative 9B would not be in conformance with the management direction provided in the Jarbidge RMP. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9C (9a.5, 9b, 9c, 9c.1)

Alternative 9C was originally identified by the Proponents as the Proposed Route. County representatives and the Proponents, identified a new route that has been adopted by the Proponents as proposed, based on consultation between local landowners and residents concerned about impacts to irrigated agriculture and dairies. However, Alternative 9C (formerly the Proposed Route) remains a feasible alternative that warrants detailed analysis. This alternative is 15.3 miles long, compared to 14.7 miles for the corresponding portion of the Proposed Route.

Alternative 9C follows an existing 138-kV transmission line in a northerly direction. The alternative is parallel to the east of an ACEC in Salmon Falls Creek, passing within 3.5 miles west of Castleford, Idaho. At MP 9, the alternative crosses the existing transmission line, turns to the west passing along the east then the north side of Balanced Rock County Park, and crosses Salmon Falls Creek. The alternative continues west through Blue Gulch, before meeting the Proposed Route at MP 47.2 at reference point 9c.1.

Alternative 9C would not be in conformance with the management direction provided in the Jarbidge and SRBOP RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9D (9n, 9n.1 9r, 9p, 9r.1, 9r.4,)

Alternative 9D has been 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 has been developed through consultation between County Task Force and BLM representatives and the Proponents. Although 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 a RMP amendment), it still warrants consideration as a feasible alternative. This alternative is 58.4 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

From point 9n, Alternative 9D would proceed northwest paralleling the north side of Bruneau River, crossing State Highway 51 at MP 5.4, and passing approximately 1.5 miles north of Bruneau, Idaho. After 7 miles, the alternative turns west crossing the Narrows portion of C.J. Strike Reservoir and the Cove Non-motorized Area before turning north and crossing the Snake River approximately 0.5 mile downstream from C.J. Strike Dam. 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. At MP 45.9 the alternative crosses near the Swan Falls Reservoir into Owyhee County before meeting the Proposed Route at MP 152.6, reference point 9p. The Owyhee County Task Force has made an additional request to shift the crossing farther north of the reservoir. The alignment was revised accordingly.

Alternative 9D would not be in conformance with the management direction provided in the SRBOP RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9E (9n, 9s, 9p)

Alternative 9E has been 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. Although this alternative substantially deviates from the designated WWE corridor, it still warrants consideration as a feasible alternative. This alternative is 68.7 miles long, compared to 57.2 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, then turns west 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 through the Owyhee Foothills. At MP 42.6, the alternative crosses Castle Creek, and makes several bends within the next 15 miles to avoid the buffers of sage-grouse leks. At MP 56.7, the alternative turns to the north at Sinker Creek, proceeding approximately 10 miles, before intercepting the Proposed Route at MP 152.6 (reference point 9p).

Alternative 9E would not be in conformance with the management direction provided in the SRBOP RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9F (9n, 9l, 9m, 9m.1, 9n.1, 9r, 9r.1, 9r.4, 9r.5, 9p)[8]

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 2-mile interval that has been subsequently identified as a 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 62.9 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

From reference point 9n, Alternative 9F would proceed to the west, following the Proposed Segment and the WWE corridor for approximately 18 miles. At reference point 9m.1, just south and west of C.J. Strike Reservoir dam, the route turns to the northeast then north for approximately 3 miles to re-join Alternative 9D. 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 RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9G (9n, 9n.1, 9r, 9r.1, 9r.2, 9p)

Alternative 9G is another alternative route that avoids the Guffey Butte-Black Butte Non-Motorized Area. Alternatives 9D/9F would take a more northerly path than Alternative 9G (Alternatives 9D/9F would be located in the same location as Alternative 8E). Two separate lines cannot be placed in this single location; therefore, 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 location conflict with its placement several miles south of the shared alignment, which would allow both Alternatives 9G and 8E to be selected. This alternative is 56.4 miles long, compared to 57.2 miles for the corresponding portion of the Proposed Route.

Alternative 9G follows Alternative 9F for the first 41 miles, proceeding west from reference point 9n along the Proposed Route and WWE corridor. At reference point 9n.1, just south and west of C.J. Strike Reservoir dam, the route turns to the northeast then north for approximately 3 miles to rejoin Alternatives 9D/9F. Alternatives 9D/9F and 9G would then follow the same path, proceeding to the northwest and following an existing 138-kV transmission line. At reference point 9r.1, Alternative 9G turns to the west, crossing the Guffey Butte-Black Butte Archaeological District and the Snake River approximately 4 miles south of Sinker Butte. The route continues to the north and west

[8] 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

to point 9p. Like Alternative 9F, Alternative 9G would cross the Cove Non-motorized Area.

Alternative 9G would not be in conformance with the management direction provided in the SRBOP RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

Alternative 9H (9n, 9l, 9m, 9m.1, 9n.1, 9r, 9r.1, 9r2, 9p)

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 9n, Alternative 9H is coincident to Alternative 9F, proceeding west from reference point 9n along the Proposed Route and WWE corridor. At reference point 9n.1, just south and west of C.J. Strike Reservoir Dam, the route turns to the northeast then north for approximately 3 miles to rejoin Alternative 9D/9G. Alternatives 9D/9F/9G and 9H would then follow the same path, proceeding to the northwest and following an existing 138-kV transmission line to reference point 9r.1. Alternative 9H then turns to the west, and crosses the Guffey Butte-Black Butte Archaeological District and the Snake River approximately 4 miles south of Sinker Butte. The route continues to the north and west to point 9p following the same path as Alternative 9G.

Alternative 9H would not be in conformance with the management direction provided in the SRBOP RMPs. Table 2.2-1 describes the management direction, the proposed amendment, and the sections of the Draft EIS where the effects are analyzed. Appendix F provides the proposed amendment and Appendix G provides the analysis and rationale for visual resources.

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-2). 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 32.9 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, 10c, 9)

The 33.6-mile-long Proposed Route (8, 10a, 10c, 9) exits the Midpoint Substation in a southeast direction for 11.1 miles (point 10a). At this point, the route turns south crossing the North Side Main Canal, and angles southeast again before turning south again at MP 16.1. From MP 19 to the proposed Cedar Hill Substation, except in the vicinity of the Minidoka National Historic Site, the Proposed Route would parallel an existing 345-kV line. The route continues south across Goose Lake west of the community of Eden and then crosses I-84, the Snake River, the Jerome County/Twin Falls County line, and U.S. Highway 30 before entering the proposed Cedar Hill Substation at point 9. The Proposed Route would follow the alignment of the planned SWIP. If the SWIP 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 amendment would be required for the Segment 10 Proposed Route.

2.4.11.3 Alternative Eliminated from Detailed Study

Minidoka Variation (10a, 10b, 10c)

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 10a 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 10c.

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.

2.4.11.4 Alternatives Studied in Detail

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

2.4.12 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 2.4-2 presents the length and

Table 2.4-2. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors

Segment	Segment or Alternative	Total Segment Length (miles)[1/]	Within WWE Corridor (federal land only)		Within Projected WWE Corridor[2/]		Adjacent to Projected WWE Corridor (within 1/3 mile of WWE Corridor)		Within or Adjacent to Existing Transmission Corridor (includes WWE Corridor and existing T-lines)	
			Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length
1E	Proposed – Total Length	100.6	–	–	6.6	6.5	6.7	6.7	13.9	13.8
	Proposed – Comparison portion for Alt. 1E-A	17.6	–	–	–	–	0.4	2.4	3.9	21.9
	Alternative 1E-A	16.1	–	–	7.2	45.0	6.3	39.3	14.2	88.0
	Proposed – Comparison portion for Alt. 1E-B	37.9	–	–	–	–	–	–	–	–
	Alternative 1E-B	59.3	–	–	–	–	–	–	–	–
	Proposed – Comparison portion for Alt. 1E-C	75.4	–	–	1.7	2.2	3.6	4.8	2.4	3.2
	Alternative 1E-C	48.7	2.1	4.2	4.7	9.6	27.0	55.5	14.7	30.2
1W(a)	Proposed – Total Length	76.5	18.8	24.6	14.1	18.4	21.9	28.6	51.4	67.2
	Alternative 1W-A	16.2	–	–	–	–	10.7	66.1	5.3	32.9
	Proposed – Comparison portion for Alt. 1W-A	20.3	–	–	–	–	–	–	8.1	39.8
1W(c)	Proposed – Total Length	70.6	21.0	29.8	38.9	55.1	11.2	15.9	70.6	100.0
2	Proposed – Total Length	96.7	16.5	17.0	24.2	25.0	11.8	12.2	53.9	55.8
	Proposed – Comparison portion for Alt. 2A	28.8	0.7	2.4	4.5	15.5	1.9	6.7	5.6	19.4
	Alternative 2A	28.4	8.0	28.1	13.7	48.3	2.3	8.0	28.3	99.5
	Proposed – Comparison portion for Alt. 2B	7.0	0.4	5.0	–	–	0.4	5.8	0.4	5.0
	Alternative 2B	6.2	1.2	19.0	1.7	27.0	0.4	7.0	5.0	80.2
	Proposed – Comparison portion for Alt. 2C	28.4	0.4	1.5	2.3	8.1	3.1	11.0	4.7	16.7
	Alternative 2C	24.4	1.4	5.8	0.3	1.2	1.5	6.0	3.5	14.3
3	Proposed – Total Length	46.6	7.3	15.6	9.3	20.0	4.0	8.6	40.9	87.8
	Seg 3A (345 kV)	5.5	0.7	11.8	0.1	1.0	0.3	6.0	1.0	17.6
	Seg 3B (230 kV)	4.3	1.2	26.5	0.3	7.8	1.1	25.2	2.9	67.6
4	Proposed – Total Length	203.0	11.9	5.9	14.1	6.9	10.6	5.2	96.4	47.5
	Proposed – Comparison portion for Alts. 4A–4F	90.2	–	–	–	–	–	–	19.8	22.0

Table 2.4-2. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Segment or Alternative	Total Segment Length (miles)	Within WWE Corridor (federal land only)		Within Projected WWE Corridor (includes all land ownership)[1/]		Adjacent to Projected WWE Corridor (within 1/3 mile of WWE Corridor)		Within or Adjacent to Existing Transmission Corridor (includes WWE Corridor and existing T-lines)	
			Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length
	Alternative 4A	85.2	–	–	–	–	–	–	77.5	91.0
	Alternative 4B	100.2	–	–	–	–	–	–	35.6	35.6
	Alternative 4C	101.6	–	–	–	–	–	–	35.6	35.0
	Alternative 4D	100.8	–	–	–	–	–	–	35.6	35.3
	Alternative 4E	102.2	–	–	–	–	–	–	35.6	34.8
	Alternative 4F	87.5	–	–	–	–	–	–	54.1	61.8
5	Proposed – Total Length	54.6	–	–	–	–	–	–	16.8	30.8
	Proposed – Comparison portion for Alts.5A, 5B	25.3	–	–	–	–	–	–	1.9	7.6
	Alternative 5A	33.7	–	–	–	–	–	–	1.8	5.3
	Alternative 5B	44.4	–	–	–	–	–	–	1.8	4.0
	Proposed – Comparison portion for Alt.5C	33.2	–	–	–	–	–	–	0.7	2.1
	Alternative 5C	26.1	–	–	–	–	–	–	26.1	100.0
	Proposed – Comparison portion for Alt.5D	19.4	–	–	–	–	–	–	5.8	29.7
	Alternative 5D	17.5	–	–	–	–	–	–	1.3	7.4
	Proposed – Comparison portion for Alt.5E	5.8	–	–	–	–	–	–	5.4	93.8
	Alternative 5E	5.3	–	–	–	–	–	–	5.3	100.0
6	Proposed – Total Length[3/]	85.3	–	–	–	–	–	–		
7	Proposed – Total Length	118.1	0.5	0.4	0.9	0.8	1.1	0.9	16.5	14.0
	Proposed – Comparison portion for Alts.7A, 7B	35.2	–	–	–	–	–	–	4.3	12.2
	Alternative 7A	38.0	–	–	–	–	–	–	–	–
	Alternative 7B	46.5	–	–	–	–	–	–	–	–
	Proposed – Comparison portion for Alt.7C	20.1	–	–	–	–	–	–	–	–
	Alternative 7C	20.3	–	–	–	–	–	–	–	–
	Proposed – Comparison portion for Alt.7D	6.2	–	–	–	–	–	–	–	–
	Alternative 7D	6.8	–	–	–	–	–	–	–	–

Table 2.4-2. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Segment or Alternative	Total Segment Length (miles)	Within WWE Corridor (federal land only)		Within Projected WWE Corridor (includes all land ownership)[1/]		Adjacent to Projected WWE Corridor (within 1/3 mile of WWE Corridor)		Within or Adjacent to Existing Transmission Corridor (includes WWE Corridor and existing T-lines)	
			Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length
	Proposed – Comparison portion for Alt.7E	3.8	–	–	–	–	–	–	–	–
	Alternative 7E	4.5	–	–	–	–	–	–	–	–
	Proposed – Comparison portion for Alt.7F	10.5	–	–	–	–	–	–	–	–
	Alternative 7F	10.8	–	–	–	–	–	–	–	–
	Proposed – Comparison portion for Alt.7G	3.1	0.1	1.9	–	–	0.4	11.4	0.2	6.9
	Alternative 7G	3.2	0.1	1.5	–	–	0.3	10.3	0.2	5.6
	Proposed – Comparison portion for Alts.7H, 7I	118.1	0.5	0.4	0.9	0.8	1.1	0.9	16.5	14.0
	Alternative 7H	127.5	0.5	0.4	1.1	0.9	1.2	1.0	12.2	9.6
	Alternative 7I	173.4	8.3	4.8	3.3	1.9	9.1	5.3	30.0	17.3
	Proposed – Comparison portion 7/9 for Alt.7J[4/]	143.9	5.6	3.9	4.1	2.9	2.0	1.4	24.9	17.3
	Alternative 7J[4/]	202.1	19.7	9.7	13.1	6.5	11.4	5.6	41.6	20.6
8	Proposed – Total Length	131.0	18.8	14.4	19.3	14.7	4.7	3.6	114.5	87.4
	Proposed – Comparison portion for Alt. 8A	51.4	–	–	–	–	0.6	1.1	51.1	99.3
	Alternative 8A	53.6	18.9	35.2	10.7	19.9	9.3	17.3	38.3	71.5
	Proposed – Comparison portion for Alt. 8B	45.3	5.3	11.8	1.2	2.7	2.4	5.2	32.0	70.7
	Alternative 8B	45.8	1.0	2.3	0.6	1.3	1.1	2.3	17.1	37.5
	Proposed – Comparison portion for Alt. 8C	6.5	0.8	13.0	–	0.0	0.5	7.7	2.1	31.8
	Alternative 8C	6.4	1.9	28.9	2.5	38.4	0.5	7.2	5.5	86.2
	Proposed – Comparison portion for Alt. 8D	6.9	–	–	–	–	–	–	6.9	100.0
	Alternative 8D	8.1	–	–	–	–	–	–	6.9	85.7
	Proposed – Comparison portion for Alt. 8E	7.0	–	–	–	–	–	–	3.4	49.2
	Alternative 8E	18.5	–	–	–	–	–	–	11.3	61.1

Table 2.4-2. Length and Percentage of Proposed Route and Route Alternatives That Align with West-wide Energy Corridors and Existing Corridors (continued)

Segment	Segment or Alternative	Total Segment Length (miles)	Within WWE Corridor (federal land only)		Within Projected WWE Corridor (includes all land ownership)[1/]		Adjacent to Projected WWE Corridor (within 1/3 mile of WWE Corridor)		Within or Adjacent to Existing Transmission Corridor (includes WWE Corridor and existing T-lines)	
			Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length	Length (miles)	% Total Length
9	Proposed – Total Length	161.7	53.9	33.3	13.9	8.6	10.6	6.5	16.9	10.5
	Proposed – Comparison portion for Alt. 9A	7.8	–	–	–	–	0.4	5.4	0.4	4.6
	Alternative 9A	7.7	–	0.5	–	–	2.3	29.2	2.2	28.2
	Proposed – Comparison portion for Alt. 9B	49.5	3.8	7.8	–	0.0	1.5	3.0	1.0	2.1
	Alternative 9B	53.2	28.2	52.9	15.7	29.5	2.8	5.2	23.3	43.7
	Proposed – Comparison portion for Alt. 9C	14.7	–	–	–	–	–	–	1.0	7.0
	Alternative 9C	15.3	–	–	–	–	3.1	20.5	10.4	67.7
	Proposed – Comparison portion for Alts. 9D–9H	57.2	32.8	57.4	8.5	14.8	7.3	12.8		
	Alternative 9D	58.4	0.4	0.7	–	–	1.1	1.9	31.3	53.6
	Alternative 9E	68.7	0.4	0.6	–	–	1.8	2.6		
	Alternative 9F	62.9	8.4	13.4	3.0	4.8	3.6	5.7	28.6	45.5
	Alternative 9G	56.4	0.4	0.7	–	–	1.0	1.8	26.3	46.6
	Alternative 9H	61.0	8.4	13.8	3.0	4.9	3.5	5.8	23.6	38.8
10	Proposed – Total Length	33.6	11.6	34.5	19.7	58.6	0.4	1.3	28.6	85.32

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.
4/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.
T-line = transmission line

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.[9]

2.5 SUBSTATION ALTERNATIVES

The Project includes three proposed substations, expansion at one planned substation to be constructed for other purposes, and expansions at eight existing substations. Alternative sites were evaluated for the three proposed substations. Alternative sites were not considered where sites already exist or station locations are planned for other projects and would be in place prior to construction of Gateway West. None of the substation alternatives was studied in detail in the EIS for the reasons presented in Section 2.5.1.

2.5.1 Proposed Substations

2.5.1.1 Creston Substation

Proposed Action

The proposed Creston Substation would be located approximately 4 miles south of Wamsutter, Wyoming, on public land, as shown on Appendix A, Figure A-13. The east side of Wamsutter Crooks Gap Road was chosen because the proposed substation can be located adjacent to the road and the existing transmission line and avoid wetlands, oil and gas wells, and pipelines. There appear to be no constraints that would prohibit construction of the proposed substation at this location. It is the western terminus of Segment 2 (Appendix A, Figure A-3). The new Gateway West 230-kV transmission lines from Aeolus Substation and continuing to the Anticline Substation (Segments 2 and 3) would be terminated within the proposed substation fenced area. Line terminals for additional 230-kV line bays would be added to terminate additional 230-kV lines as required to serve PacifiCorp's electrical load in the Creston area.

A substation "bay" is the physical location within the substation fenced area where high-voltage circuit breakers and associated steel transmission line termination structures, high-voltage switches, bus supports, controls, and other equipment would be installed. The 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures would be installed for the transmission line.

Approximately 13 acres would be developed within the fenced area of the Creston Substation site to accommodate the required line terminations and associated equipment including 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures. The 230-kV transmission line termination structures would be approximately 70 feet tall. A control house would be constructed within the fenced area to accommodate the necessary system communications and

[9] A route that falls within federal land mapped as WWE corridor is referred to as "within WWE corridor." A route that falls within non-federal land parcels located between federal land parcels mapped as WWE corridor is referred to as "within projected WWE corridor." A route that does not fall within the WWE corridor or projected 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 or projected WWE corridor."

control equipment. The proposed site would be located on BLM-managed land. A new gravel access road of approximately 500 feet would be constructed to the site from the existing road.

Alternative Substations Eliminated from Detailed Study

In the vicinity of the oil and gas load, the Proponents considered the areas east and west of Wamsutter Crooks Gap Road and south of the existing 230-kV line, just west of the Carbon County/Sweetwater County line for the planned Creston Substation. These areas feature localized constraints including large wetland areas, numerous pipelines, and active oil and gas wells. Because of these constraints, these sites were dropped from further consideration.

2.5.1.2 Anticline and Jim Bridger Substations

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-14. The proposed substation would consist of a new 500-kV yard constructed southeast of the power plant occupying a fenced area of about 125 acres on private land (Appendix A, Figure A-4). Equipment to be installed within the fenced area would include 500-kV and 345-kV circuit breaker bays and associated equipment, bus supports, high-voltage switches, transmission line termination structures, 500-kV transformers, 345-kV phase shifting transformer, 500-kV reactors, 500-kV series capacitors, and a new control building to house communications and control equipment. Access to the new 500-kV yard would require improving about 0.3-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 would be realigned to provide site drainage.

The new 500-kV line from Creston, part of Segment 3, and the two new 500-kV lines going to Populus Substation (Segment 4) would connect into the Anticline Substation yard.

The existing Jim Bridger Power Plant has separate 230-kV and 345-kV substation yards located east and west of the plant, respectively (Appendix A, Figure A-15). Each substation would require modifications and interconnecting transmission lines as part of Gateway West.

- The new circuit of the Segment 3 double-circuit transmission line from Creston Substation (Segment 3B, initially operated at 230 kV) would extend on single-circuit structures from the vicinity of the proposed Anticline Substation (but not electrically connect to it) 4.3 miles and terminate at the existing 230-kV yard, which would be modified to accommodate the line termination position. No additional land would be required for construction or operation.
- 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) would be required to electrically connect the two substations.

The Jim Bridger 345-kV yard would be expanded by about 10 acres to accommodate the line termination position.

The structure types to be used for the short interconnecting 230-kV and 345-kV lines would be determined during final design and would be either single-circuit steel lattice tower types or H-frame weathering steel similar in appearance to the single-circuit 230-kV and 500-kV structures proposed for other Gateway West line segments.

Alternative Substations Eliminated from Detailed Study

West Alternative Anticline Site

This alternative site is located approximately 3,100 feet southwest of the existing Jim Bridger Substation between an active coal mine to the west, gas wells, and the existing transmission corridor to the north, and an existing pond to the east. It would also be bordered on the northeast, southeast, and southwest by existing natural gas pipelines. Topography is irregular and construction would require substantial grading to create a relatively level site. Also, this site would require a new access road to the Jim Bridger Power Plant access road, a distance of approximately 0.5 mile.

Because of substantial earth work required, the lack of current access, and the numerous site constraints, this site was dropped from further consideration.

North Alternative Anticline Site

This alternative substation site is located on grassland (partially pivot irrigated) about 1.5 miles west of the Jim Bridger Power Plant and north of the existing 345-kV transmission corridor. Topography at the site is sloping to the northeast (less irregular and less steep than West Alternative Site). It is bordered by gas wells to the east, but would have considerable room to the west and north, and an access via an existing gravel road (Wamsutter Road) that connects this site to the power plant site. Development of a substation at this alternative site would require an approximately 2.2 mile-long 345-kV transmission line interconnection with the existing Jim Bridger Substation.

This site has a number of encumbrances on the property and would not be available for substation development. Also, this site would require an additional crossing of the three 345-kV single-circuit lines. For these reasons, this site was dropped from further consideration.

2.5.1.3 Cedar Hill Substation

Proposed Action

The proposed Cedar Hill Substation would be located on public and private land approximately 20 miles southeast of Twin Falls, Idaho, as shown on Appendix A, Figure A-16 as the western terminus of Segment 7. The Cedar Hill Substation would be the interconnection point for three new Gateway 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).

Approximately 45 acres would be developed and fenced (Appendix A, Figure A-15). Each of the transmission line bays would contain high-voltage circuit breakers and switches, bus supports, and control equipment. New 500-kV reactors and 500-kV series capacitors would be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, would be installed to terminate the 500-kV conductors. A new control building would be constructed to house the 500-kV communications and control equipment for the proposed Gateway 500-kV transmission lines. Approximately 1,000 feet of new access road would be required between the existing county line road and the substation.

Rogerson Alternate Substation Site

Local landowners propose that the Cedar Hill Substation be located near the point where Alternative 7J would cross an existing 345-kV transmission line and the proposed SWIP (a proposed 500-kV transmission line currently approved for construction, but which has not yet been constructed). This junction would be a move of about 24 miles southwest from its current proposed location at point 9 to point 13 near Rogerson, Idaho (Appendix A, Figure A-9). The Alternative 7J Rogerson Substation layout is shown on Figure A-24 in Appendix A.

Alternative Substation Eliminated from Detailed Study

Southern Cedar Hill Site

A southern alternative site was initially identified by the Proponents early in the Project planning phase, prior to the detailed corridor development and evaluation process. However, the routing of the east-west transmission line routes (Segments 7 and 9) to this site would conflict with a VRM Class II area located immediately to the west. In addition, analyses determined it would require moderate grading to prepare the substation site. This site is on BLM-managed land wholly within a VRM Class II area. A substation at this location would not meet visual quality management objectives stated in the RMP and was dropped from further consideration.

2.5.2 Planned Substations

The Aeolus Substation was already planned prior to the initiation of planning for the Gateway West Project. Because the location of this substation is already planned, no alternative sites were considered. The following describes the location and the modifications proposed as part of the Gateway West Project.

2.5.2.1 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-17. The substation would be the southern terminus of Segment 1. The Aeolus Substation would be expanded to electrically terminate the two new 230-kV lines (1W[a] and 1E), the reconstructed portion of the Dave Johnston – Rock Springs 230-kV line between the Dave Johnston Power Plant and the planned Aeolus Substation, and the two new transmission lines that would extend west to the Creston and Anticline Substations (Segment 2 and 3). One of the new westerly lines to Creston and Anticline would be initially energized at 230 kV and the other line would be energized at 500 kV. The

addition of these new facilities would increase the size of the Aeolus Substation fenced area by about 90 acres (Appendix A, Figure A-17).

Equipment installed would 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 and 500-kV shunt reactors (which resemble a transformer in appearance) would be installed. In addition, a Static Var Compensator would be installed for system reliability. This equipment would occupy about 10 to 15 acres within the overall substation fenced area. The planned control house would be expanded and/or a new control house added to accommodate the necessary system communications and control equipment.

The Aeolus Substation 500-kV transformers would have an approximate weight of 600,000 pounds during shipment. They would be transported to the Project vicinity, off loaded to a heavy haul transporter, and then transported over the highway to the Aeolus site. The heavy haul transporter would be approximately 190 feet long, have 35 axles, and weigh 300,000 to 325,000 pounds. Due to the size of the vehicle, a route with minimal grade and large turning radii would be necessary.

Figure 2.5-1 shows access routes to the Aeolus site. The site is located nearest to CR 121. CR 121 is approached by way of U.S. Highway 30 from one of two directions: one

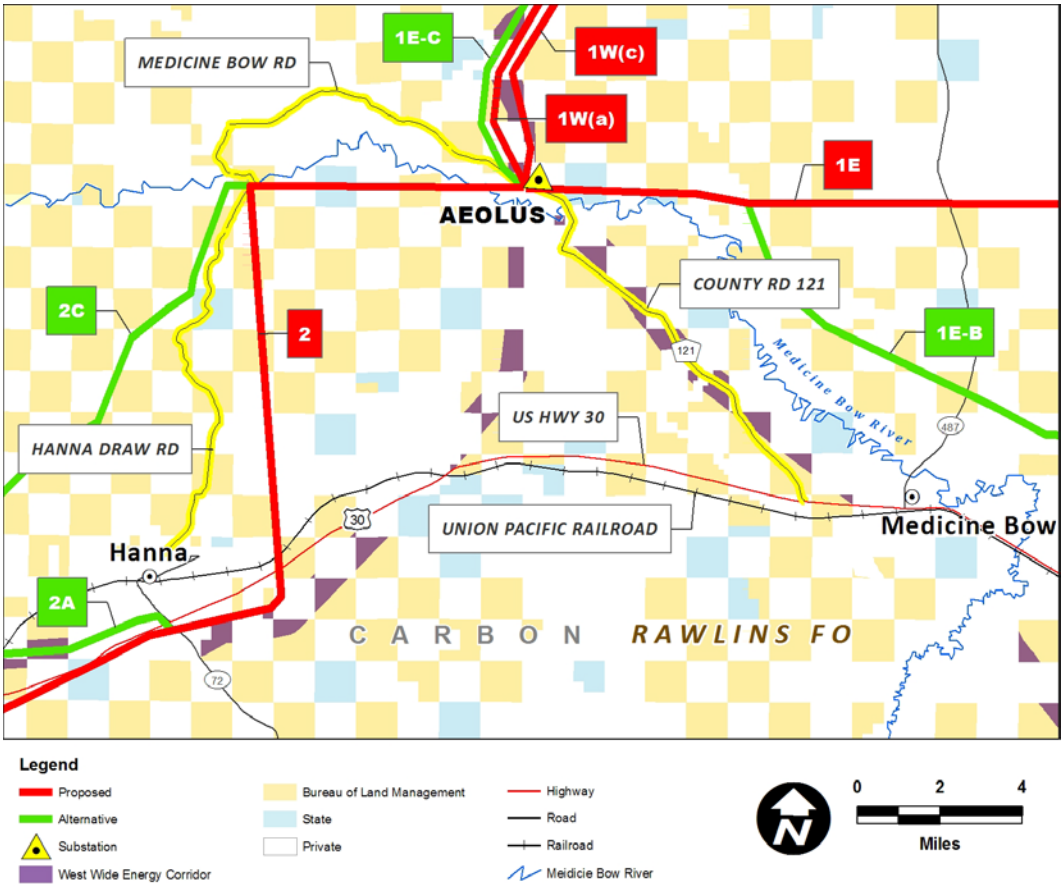


Figure 2.5-1. Proposed Access to Aeolus Substation

route from Hanna and a second from Medicine Bow. The Proponents selected the route from Medicine Bow for use in transporting heavy equipment to the substation site because it is the shortest distance (12 miles) from a rail loading facility and because it avoids sharper curves and steeper grades on the road from Hanna. While both routes have bridge river crossings that would need upgrades, the route from Hanna also has two stream crossings that would need to be upgraded. Due to the need for constant access to the substation site, Carbon County has also indicated a preference for the route from Medicine Bow because they would continue to maintain the roadway into the future.

CR 121 Improvements

Existing Conditions: CR 121 is currently a single-lane road, about 20 feet wide and about 11 miles long, from SR 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 would not accommodate the heavy haul transporters.

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

Needed Improvements: CR 121 would be reconstructed from SR 30 to the immediate vicinity of the Aeolus Substation. Reconstruction would result in approximately 64 acres of construction disturbance and 33 acres of new permanent roadway. Reconstruction includes:

- 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 would 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 would meet Wyoming Department of Transportation standards for HS-20 loading[10]. Based on preliminary engineering, the new bridge would require an approximate span of 125 to 150 feet and a 24-foot travelway width. The new bridge would 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 would be evaluated for eligibility for listing on the NRHP and any required mitigation, including photographic recordation, would be completed.

2.5.3 Existing Substations

The substations described in this section are already operational. Alternative locations for these substations were not considered. Expansion of the 345-kV Jim Bridger Substation is described in conjunction with the proposed Anticline Substation (Section 2.5.1.2). The following describes their locations and the modifications proposed as part of the Gateway West Project.

2.5.3.1 Windstar Substation

The Windstar Substation now under construction for another project 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-2).

For the Gateway West Project, two new 230-kV line bays would be added to the Windstar Substation to electrically terminate the two new transmission lines from the Aeolus Substation (Segments 1E and 1W[a]). The substation fenced area would be expanded by about 10 acres (Appendix A, Figure A-18).

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

2.5.3.2 Heward Substation

The Heward Substation would be an expansion of the existing Difficulty Substation, which is located about 45 miles from Bessemer Bend and approximately 34 miles north

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

of Medicine Bow, Wyoming, as shown on Appendix A, Figure A-19. The Heward expansion would add a new 230-kV yard to the west and immediately adjacent to the existing substation fenced area. The substation expansion would 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 would 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 would increase the flow through capacity of the Difficulty 230-kV bus and also facilitate maintaining power to Difficulty Substation customers during construction.

The new substation 230-kV yard to be developed and fenced would encompass approximately 5 acres. The new 230-kV yard would include three 230-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures. The 230-kV transmission line termination structures would be approximately 70 feet tall. A new control house would 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 would be extended to interconnect to the existing Difficulty Substation 230-kV bus. The existing Difficulty Substation access road would be utilized on the current alignment and state highway entrance. Approximately 500 feet of additional roadway would 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 would enter and exit the new substation yard from the north and south as shown in Appendix A, Figure A-19.

2.5.3.3 Populus Substation

The existing Populus Substation (Figure A-20), located near the town of Downey, Idaho, would be expanded by about 80 acres on private land to accommodate the addition of the Gateway West 500-kV transmission lines (Appendix A, Figure A-7). A new 500-kV yard would be constructed in the expansion area north of the existing 345-kV substation yard and interconnected to the then-existing 345-kV station equipment through a new 500/345-kV transformer bank (Appendix A, Figure 20). Five hundred-kV transmission line bays would be installed for connection to the transformer bank and the termination of the four 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 would contain high-voltage circuit breakers and switches, bus supports, and control equipment. A new 500/345-kV transformer bank, 500-kV reactors, and 500-kV series capacitors and 500-kV shunt capacitors would be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, would be installed to physically terminate the 500-kV conductors. A new control building would be constructed to house the 500-kV communications and control equipment. The existing access road would be used to reach the site.

2.5.3.4 Borah Substation

The existing Borah Substation is located near American Falls, Idaho. Expansion of the existing substation would require expansion of the fenced area by approximately 35 acres on private land to accommodate the new 500-kV facilities (Appendix A, Figure A-8). The existing Midpoint – Kinport 345-kV line, which currently bypasses the Borah Substation, would 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) would terminate in the new expansion area. The new 500-kV facilities would be connected to the existing station by the addition of a 500/345-kV transformer bank (Appendix A, Figure A-21).

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

2.5.3.5 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 would 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) would terminate in the expansion area (Appendix A, Figure A-22).

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

2.5.3.6 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.

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-23). One bay would 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 would contain high-voltage circuit breakers and switches, bus supports, and control equipment.

New 500-kV reactors and 500-kV series capacitors would be installed within the fenced area. Transmission line termination structures, approximately 125 to 135 feet tall, would be installed to physically terminate the 500-kV conductors. The communications and control equipment for the Gateway 500-kV transmission lines would be housed within the existing control building. The existing access road would 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 to date 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, Section 1.1, provides further details of each structure type. The Proponents propose H-frame steel structures (Appendix B, Figure B-1) for the 230-kV segments of the Project. They propose either single-circuit (Appendix B, Figure B-2) or double-circuit (Appendix B, Figure B-3) steel lattice structures for the 500-kV segments. The Proponents report that the steel lattice configuration is the least cost option for the 500-kV segments.

Table 2.6-1 summarizes the 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 Structures by Segment

Segment	Circuits and Voltage	Proposed Structure Type
1E	New Single-Circuit 230-kV	Steel H-frame
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 Double-Circuit 500-kV	Double-circuit 500-kV steel lattice tower
3	New Double-Circuit 500-kV	Double-circuit 500-kV steel lattice tower
4	New Double-Circuit 500-kV	Double-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

2.6.2 Structure Design Alternatives

A comparison of various structure types is shown in Table 2.6-2. Appendix B, Figures B-1 through B-7 illustrate the different structure types considered and not considered.

2.6.2.1 Double-Circuit 500-kV Structures

Vertical Steel Lattice

The proposed double-circuit 500-kV structures use a horizontal delta configuration to reduce height. For the vertical steel lattice tower, one circuit of three phases is installed on each side of the tower in a vertical configuration. While the vertical configuration is lower in cost for some projects, the average height of the vertical configuration tower would have to be over 200 feet for the Gateway West Project to satisfy the Proponents required phase to phase spacing for live-line maintenance activities. Federal Aviation Administration regulations require structures over 200 feet in height to be lighted (USDOT 2000). Lighting these structures, in addition to the human and wildlife impacts, would also substantially increase costs, because each tower light must be supplied with low-voltage electricity, requiring additional distribution lines to supply the lighting. Lights would have to be maintained and replaced, further adding to increased access to the ROW including maintenance disturbances and costs.

The Proponents considered reducing the height of the vertical steel lattice to avoid the need for lighting. However, to maintain required phase-to-phase and phase-to-ground clearances for live-line maintenance activities, additional towers would be needed because span lengths would have to be shortened, adding to the cost of the vertical steel lattice tower alternative. The vertical steel lattice configuration is therefore not carried forward for detailed analysis, because it has the disadvantage and cost impact of requiring lighting of each structure, and has the potential for an increased number of towers per mile to avoid lighting.

Tubular H-Frame

The double-circuit 500-kV tubular H-frame horizontal configurations represent the highest unit costs and have higher construction impacts than those of lattice towers. While the lattice structures are designed with four widely-spaced feet to provide lateral stability against the weight of the conductor and adverse environmental conditions, including high winds and ice storms, tubular H-frame structures have deeper and wider diameter foundations, which require more concrete per structure to provide the same lateral stability. The structures also weigh more than the lattice structures, requiring larger cranes for their installation and wider roads with greater surface stability.

Table 2.6-2. Alternative 500-kV Conductor Support Structure Comparison

Single- or Double-Circuit Design	Single-Circuit Towers				Double-Circuit Towers			
Tower Material	Lattice Steel	Lattice Steel	Tubular Steel	Tubular Steel	Lattice Steel	Lattice Steel	Tubular Steel	Tubular Steel
Tower Finish	Dulled Galvanized	Dulled Galvanized	Weathering Steel	Weathering Steel	Dulled Galvanized	Dulled Galvanized	Weathering Steel	Weathering Steel
Tower Type - Tangent	Guyed Delta [1/]	Four-legged	H-Frame	Single Pole	Four-legged	Four-legged	Horizontal H-Frame	Delta H-Frame
Conductor Configuration	Delta	Delta	Horizontal	Delta	Vertical	Delta	Delta	Horizontal
Average Tower Height - Feet	156	156	133	165	205	170	165	165
Proposed ROW Width - Feet	250	250	250	250	300	300	300	300
Average Span - Feet	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300	1,200 – 1,300
Approximate Tangent Tower Weight - Pounds.	29,700	45,660	56,500	60,000	55,000	82,237	101,300	111,000
Foundation Type	Bearing Pad & Screw Anchors for Guys	Drilled Pier	Drilled Pier	Drilled Pier	Drilled Pier	Drilled Pier	Drilled Pier	Drilled Pier
Typical Foundation Diameter - Feet	1.2	4	7	9	5	5	8.5	8.5
Typical Foundation Depth - Feet	4 feet for Pad 10 – 20 feet for Guy Anchors	22	25	35	30	26	30	32
Number of Foundations	1 for Mast & 4 for Guy Anchors	4	2	1	4	4	2	2
Construction Methods	Crane Helicopter	Crane Helicopter	Crane Helicopter	Crane	Crane	Crane	Crane	Crane
Cost	Lower	Lower	High	Highest	Lower	Mid-Range	High	Highest
Comments	Guyed "V" structure would be 25' lower and approx 4600 lbs lighter	Smaller foundations can be dug with smaller drill rig	Large Foundation sizes require larger drilling rig	Large Foundation sizes require larger drilling rig	Most towers would require lighting	Smaller foundations can be dug with smaller drill rig	Very large foundations and weight increase construction costs	Tower configuration makes live line work difficult to the upper center phase
Conclusions	Carried forward for use under certain conditions	Proposed Single-Circuit Structure	Carried forward as mitigation only	Not carried forward for detailed analysis	Not carried forward for detailed analysis	Proposed Double-Circuit Structure	Not carried forward for detailed analysis	Not carried forward for detailed analysis

1/ A guyed "V" structure is also a feasible structure type with many of the same characteristics as the guyed "Delta."

Note: Structure heights, weights, foundation depths and diameters are either taken from Proponents' engineering vendor's analysis for 500-kV structures, from Society of American Engineer's bid drawings, or estimated from preliminary calculations and/or experience. These values are representative of what might be expected as the result of detailed design and are based on comparisons with other projects and the Mona-Oquirrh design criteria memorandum received from PacifiCorp. Designed values would be expected to vary from these values.

Once these transmission lines are in service, any needed maintenance must be conducted while the line is “hot” or energized. This presents danger to the line workers and requires careful measures to ensure their safety. Because of the horizontal configuration of the electrical phase conductors, the center phase on the upper circuit cannot practically be accessed with the lines energized. As a result, the horizontal H-frame double-circuit structure alternative is not feasible when energized line maintenance capability is required. Horizontal double-circuit structures were therefore not carried forward to detailed analysis.

The other double-circuit 500-kV H-frame configuration considered was a delta configuration. Although the H-frame delta structure configuration can technically be maintained with the system energized, its additional foundation and crane requirements present a larger environmental impact than equivalent lattice structures. Because it offers no clear advantage over the proposed lattice structures and is more expensive, the H-frame delta configuration is not carried forward into detailed analysis.

2.6.2.2 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. Further, 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 H-frame structure was carried forward for detailed analysis.

2.6.2.3 Single-Circuit 500 – kV Structures

Table 2.1-6 provides a description and comparison of the proposed single-circuit lattice and guyed structures.

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 2.6-3 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 adverse impact to the environment.

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.

Table 2.6-3. Summary/Comparison of Single-Circuit 500-kV Lattice Tower vs. Tubular Steel H-frame

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	Weathering Steel	
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 lbs	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 (ROW Width) 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)	
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.

Table 2.6-3. Summary/Comparison of Single-Circuit 500-kV Lattice Tower vs. Tubular Steel H-frame (continued)

Topic	Single-Circuit 500-kV Lattice Steel Tower (LST)	Single-Circuit 500-kV Tubular Steel Pole (TSP) H-Frame	Comments
Maintenance Activities	Live-line maintenance - similar. Helicopter maintenance - similar.		
Estimated Costs(excluding ROW costs)	Approximately 5-15% 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.		

2.6.3 Structure Finish and Surface Treatment Alternatives

The proposed surface finish for the single- and double-circuit lattice steel towers 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 terrain, while at the same time preserving the corrosion resistant properties of the galvanized coating on the steel. The 500-kV transmission line lattice steel towers would be specified to have a dull galvanized finish. 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.

2.6.3.1 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.
- 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.

2.6.3.2 Weathering Steel

Weathering steel, proposed for all H-frame structures, 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, nor is it 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 towers rigidity and structural integrity, which is why weathering steel is not used for lattice transmission structures.

2.6.4 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 of these lines 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.

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. 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:

- 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 an overhead counterpart (National Grid 2009). These additional costs must be approved by the public utilities commission and are passed on to all the ratepayers, not just those near the area of underground installation.
- 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 and the availability of replacement materials.
- Reactive Power Compensation—The capacitive characteristics of the underground cable insulating material and the close 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.
- 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.

2.6.4.1 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 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.

HPFF Pipe Installation

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 the Gateway West Project.

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.

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.

2.6.4.2 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

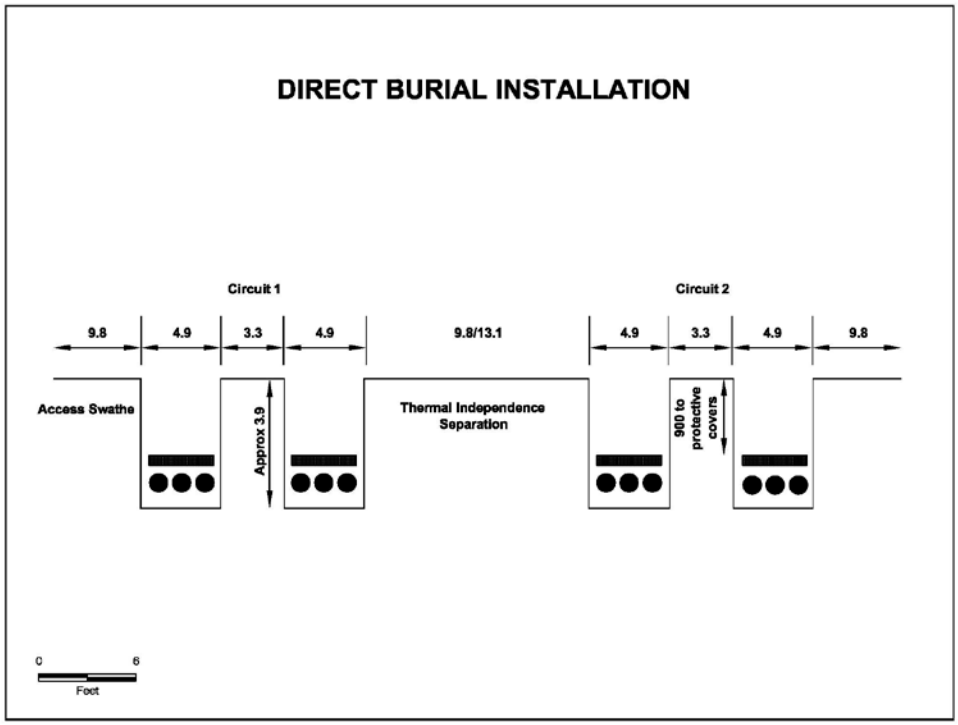


Figure 2.6-1. Direct Burial Installation

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 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

Typical XLPE Vault Installation

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.

Jack and Bore Casing Installation

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.

2.6.4.3 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.

2.6.4.4 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 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 Appendix B, which provides details on each component. Both this section and Appendix B are 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. The final part of this section (not in Appendix B) lists the Proponents' EPMs and Agency recommended mitigation measures that would apply to all routes.

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

Appendix B, Section 2.1.1 details the typical ROW land areas needed for the various components over the operational life 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, Section 2.1.2 describes how private easements are obtained for the Project.

2.7.1.2 Transmission Line System

Appendix B, Section 1.1 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 close to the transmission line as land use and physical features allow. Details are found in Appendix B, Section 1.4.2.

2.7.1.4 Access Roads and Material Laydown Yards

Appendix B, Section 1.5 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 once the BLM has selected a preferred alternative, 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 vast majority of the access roads to be used by the Project would be within the ROW requested, some access roads and laydown areas 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. Laydown 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 Appendix B, Section 1.6.

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. 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, Section 2.5.1 of 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 also Section 2.5.2 of 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 Section 2.2.7 of 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 Section 2.3.1 of Appendix B.

2.7.2.3 Substation Construction

Appendix B, Section 2.4 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

Section 2.6 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 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.

In addition, 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. Appendix B, Section 4.0 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 Environmental Protection Measures (or 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 discussed further in Appendix C. Many of the EPMs were developed in cooperation with the BLM and cooperating agencies. As a part of the Proposed Action, EPMs are assumed to be applied project-wide, regardless of land ownership or management jurisdiction. The analysis assumes they would be followed on all routes, as site-specific circumstances dictate.

The BLM has not modified EPMs because they are a part of the Proponents' proposal. However, the BLM or cooperating agencies have identified additional mitigation measures when they determined that an EPM is insufficient to protect affected resources or is not consistent with agency requirements. These additional measures are referred to as mitigation measures in this EIS. In some cases, the BLM or cooperating agencies have identified mitigation measures that would be applied instead of EPMs.

Mitigation measures are applicable to the jurisdictional extent of the agency. For example, BLM mitigation measures apply only to public lands managed by the BLM and

county requirements apply only within the individual county. Some federal requirements, such as those under the ESA and CWA, would apply Project-wide.

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 effects analysis, found in Chapter 3, was conducted based on the Project description, including the Proponents' proposed EPMs. The effects analysis assumed that the EPMs would be implemented Project-wide (regardless of landownership) except for the EPMs that are not sufficient to protect sensitive resources, could ultimately result in increased impacts to resources, or are not in compliance with agency stipulations. In these cases, it was assumed that the BLM and cooperating agencies' mitigation measure would be implemented on federal lands (or private lands if the measure's federal jurisdiction extended to these lands, e.g., ESA measures). It is anticipated that as the NEPA process proceeds, additional coordination between the Proponents and the BLM and cooperating agencies will result in alterations to the EPMs and mitigation measures, ultimately resulting in many mutually agreed-to measures that can be applied Project-wide to further protect sensitive resources.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures

Number	Description
GENERAL	
Proponent Proposed EPMs	
OM-1	The Proponents will comply with the road maintenance standards of the federal or state agency controlling the land.
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	All existing service road drainage structures will be maintained or repaired by the Proponents during O&M activities or emergency response.
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 1 [page 7 in Appendix C-4] to the greatest extend practical. The 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).
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	The Agencies may restrict general public access to closed federal or state roads and service roads that the Proponents maintain. 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 Plan will be updated as necessary to reflect current road closures and gate locations.
OM-8	Any integrated vegetation management (IVM) control method including those listed on pages 9 and 10 [in Appendix C-4] 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 2 [page 10 in Appendix C-4], and improve access to facilities
OM-9	Any IVM control method including those listed on pages 9 and 10 in Appendix C-4 may be used to control the growth of additional vegetation to maintain clearances, the IVM recommended wire and border zones as indicated in Table 2 [page 10 in Appendix C-4], and improve access to facilities.
OM-10	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.
OM-11	Any control method may be used for vegetation maintenance on access and service 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	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	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 eight inches will be left in place.
OM-18	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	Woody vegetation management within 50 feet of streams will be conducted by hand crews.
OM-20	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 2 [page 10 in Appendix C-4].
OM-21	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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
OM-25	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 service 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.
OM-30	If sensitive wildlife species are killed or injured due to O&M activities, the appropriate federal agency will be notified.
OM-31	All on-site personnel will be made aware that all birds of prey are protected by federal and state laws.
Agency Proposed Mitigation Measures	
G-1	Resource Management Plan (as amended) design criteria, Best Management Practices (BMPs) and mitigation requirements will apply on BLM-managed lands.
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.
VISUAL	
Proponent Proposed EPMs	
VR-1	The 500-kV transmission line lattice steel towers would 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	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.
VR-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. 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.
VR-4	Table 2.6-3 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 due to the increased expense but propose that, where needed for mitigation, the H-frame tangent configuration for single-circuit 500-kV is feasible. The Proponents are unwilling to propose that H-frames be used for angle or dead-end structures, but are willing to propose them for tangent use only. Lattice steel towers will need to be specified at turning tower locations and at long spans because tubular steel poles do not have the strength to withstand the forces exerted by the conductors at these locations
Agency Proposed Mitigation Measures	
VIS-1	No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.
VIS 2	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 in designated areas where practicable, providing that such alignment does not impact resource values additionally.
VIS-3	To minimize sensitive feature disturbance and/or visual contrast, in designated areas 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, with limits of standard tower design.
VIS-4	To reduce visual impacts on federal land, including potential impacts on recreation values and safety, towers are to 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	Crossings of rivers shall be at approximately right angles where practical. Strategic placement of structures shall 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. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
VIS-6	All insulators shall be made of materials that have reduced potential to reflect and refract light. Glass insulators shall be avoided when there is an alternative insulator type with lower refractive characteristics.
VIS-7	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, locate new towers to be 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	Site-specific "micrositing" will be required near certain sensitive areas, as identified by the agencies, where proposed transmission facilities would be present and could impact visual quality; these situations include: • Crossings over major highways; • Crossings of high quality historic trails; • Crossings over the North Platte Snake Rivers; • Crossing the Albion Mountains in the Sawtooth NF; • 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 • Along Forest Service roads in forested areas.
VIS-9	In specific areas identified by the applicable federal land manager (such as VRM Class II, erosive soils, steep slopes, areas near NHT Trails) the access road used for construction will be restored and an alternative access route for operations will be designated.
VIS-10	In areas in proximity to existing residential developments with an urban or suburban character, such as in the Kuna area, steel pole H-frame tubular steel poles may be specified to provide tower structures that are visually more appealing. Lattice steel towers will need to be specified at turning tower locations and at long spans because tubular steel poles do not have the strength to withstand the forces exerted by the conductors at these locations.
VIS-11	The lighting specified for the marshaling yards shall be the minimum required to meet safety and security standards. All light fixtures within 1,000 feet of a residence shall 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 shall have sensors and switches to permit the lighting to be turned off at times when it is not required.
VIS-12	Where the route would be visible on timbered slopes, limit tree removal to areas required for safety rather than from the entire ROW in order to prevent a linear feature on the landscape from clear-cutting trees. Vegetation removal requirements will consider Appendix A, "Standards and Practices for Electric System Reliability."
VIS-13	To reduce visual contrast in areas where overstory vegetation is removed for access, tower pads, or conductor clearance, specific sections of the clearing edges on federal land will be feathered to give a natural appearance, where not in conflict with regulatory requirements (e.g., NERC, WECC, and Occupational Safety and Health Administration requirements).
VIS-14	Crossing federal land along a transmission corridor shall require the preparation of a vegetation management plan for the utility corridor to minimize scenic impacts and plan for rehabilitation of existing impacts. This plan will be approved by the land-management agency prior to vegetation clearing.
VIS-15	To mitigate potential visual impacts on federal land, the construction and maintenance plan shall 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.
VIS-16	Realignment of a portion of Alternative 1E-B, adjacent to the Rock Creek and Fort Fetterman Road (KOP 993), to follow the rugged terrain and foothills of Smith Mountain should be evaluated to determine absorption effectiveness.
VIS-17	Single-circuit H-frame structures shall be used to reduce visual impact to Fort Fred Steele between MP 38.0 to MP 43.0 for Alternative 2B and MP 18.0 to MP 24.0 for Alternative 2A to match the existing structures.
VIS-18	If Alternative 7I were to be constructed, H-frame single-circuit structures would be required in the Nevada portion of the alternative as requested by the Wells FO.
VIS-19	If any of Alternatives 7H, 7I, or 7J were to be constructed, H-frame single-circuit structures would be required in the Sawtooth NF.
CULTURAL	
Proponent Proposed EPMs	
CUL-1	All work conducted under the Cultural Resources and Paleontological Monitoring and Mitigation Plan will be performed by qualified paleontologists and archeologists with trained assistants.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
CUL-2	An Unanticipated Discovery Plan will be included as part of the Cultural Resources and Paleontological Monitoring and Mitigation Plan. This plan will specify what steps will be taken if a subsurface cultural resource or fossil 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 or paleontologist to conduct an evaluation of the find, and the development of an approved data recovery program or other mitigation measures.
CUL-3	The Cultural Resource and Paleontological Monitoring and Mitigation Plan will include provisions for the preparation and curation of any fossil collections from federal lands and for the preparation of a final report based on the data recovered for activities on federal lands.
CUL-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 a 500-foot-wide area centered on the transmission line will be conducted on 100 percent of federal and state lands, and for those private lands for which survey access is granted, prior to the completion of the NEPA process. A good-faith effort will be made to obtain survey permission prior to the completion of the NEPA process.
CUL-5	If construction will adversely affect any properties listed on, or eligible for listing on, the NRHP, mitigation will be required. Mitigation 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) 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; and c) the use of landscaping or other techniques that will minimize or eliminate effects on the historic setting or ambience of standing structures.
CUL-6	Avoidance areas will be flagged prior to construction activities. Flagging will be removed once construction is completed in an area.
CUL-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	If human remains are discovered, construction will be halted and the coroner will be notified. If human remains of Native American origin are discovered, or if associated grave goods, or objects of cultural patrimony are discovered on lands managed by a federal agency, the provisions of NAGPRA will be followed.
Agency Proposed Mitigation Measures	
CR-1	(for historic properties in all segments): • Avoid direct impacts by designing the route so that no Project facilities, including access roads, are placed within the boundaries of historic properties. • Assess magnitude and location of adverse effects, should avoidance of historic properties not be feasible.
CR-2	(for historic trails and other linear routes in all segments): • Design the transmission line to cross where existing modern development occurs. • Cross the resource as close to a 90-degree angle as possible using a dog-leg or S curve. • Adjust tower placement to use the maximum span distance to achieve maximum tower distance from the linear resource. • Avoid paralleling the linear resource as much as possible and obtain maximum tower distance by shifting alignment and maximize topographic screening with lower structures, such as the two single-circuit steel-lattice design alternative.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
CR-3	Compensatory Mitigation Measures – The BLM, in consultation with the Wyoming, Nevada, and Idaho SHPOs, and consulting parties is developing a PA and a Historic Properties Treatment Plan. Compensatory mitigation measures may be developed as appropriate for specific historic resources. The following example measures may be considered for adversely affected properties, or other measures required: • Fund or provide interpretive, educational exhibits placed in museums or nearby interpretive centers. • Develop an illustrated guide to the regional archaeology and history, which would present the results of the Project's archaeology/history in layperson's terms for the general public. • Provide new markers for the BLM and other public groups to position along historic trails, highways, and other linear resources. • Fund or provide outdoor, interpretive wayside exhibits along access points to trails, highways, and other linear resources • Fund or provide educational films or curriculum for area school districts about the history and significance of the linear resources. • Acquire or trade land with willing seller(s). • Preserve landscapes from a cultural landscape perspective. • Bury elsewhere other (non-Project) lower kilovolt transmission or distribution lines. • Commission studies of associated historic sites along the corridor to support a regional context. • Re-vegetate disturbed areas to protect or restore viewsheds. • Provide monetary support to historic trail-related state parks.
CR-4	Conservation Easements – Where feasible and appropriate, conservation easements will be considered to preserve important archaeological and historic sites, and high integrity linear resource segments, or to preserve viewsheds. A conservation easement (sometimes called a conservation covenant) creates a legally enforceable land preservation agreement between a landowner and a government agency (federal, state, county, or municipality) or a qualified land protection organization ("land trust") for the purposes of conservation. It restricts real estate development, commercial and industrial uses, and certain other activities on a property to a mutually agreed upon level. The property remains the private property of the landowner.
CR-5	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.
SOCIOECONOMIC	
Proponent Proposed EPMs	
	None Proposed
Agency Proposed Mitigation Measures	
SOC-1	Housing Plan: Contract with local motels and hotels for temporary accommodation within daily commuting distance of the Project site. Temporary accommodations will be selected based on value, cleanliness, and proximity to the Project site. • Contract with local RV parks for rental spaces to accommodate workers who have access to RVs. • If temporary accommodation is not available within the Project area, seek motel and hotel accommodations outside the Project area. In this event, the Proponents would provide transportation to the Project site in the form of buses or vans, depending on workforce numbers, to ensure workers arrive at the Project site safely. • If sufficient temporary accommodation is not available, depending on the location and the number of workers involved, the Proponents would explore other temporary housing options, including the use of temporary housing facilities established for other projects, establishing temporary RV lots on public lands, and developing Project-specific temporary housing camps. The Proponents would provide bus or other transportation to the Project site if these facilities were located outside the Project area.
VEGETATION	
Proponent Proposed EPMs	
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	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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
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	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.
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	All areas treated would be documented using GPS technologies and included in the annual report.
REC-8	Areas of existing noxious weeds and invasive species will be avoided where possible.
REC-9	Project vehicles will arrive at the job site clean of all soil and herbaceous material.
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	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	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	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.
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	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	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	Certified weed-free straw, mulch, grave, 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-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 would be identified in the final Reclamation Plan and be consistent with the SWPPP.
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	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	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%.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
VEG-1	The Proponents shall consult with each appropriate local land management agency (Forest Service and BLM) office or land owner to determine appropriate seed mix for revegetation. Also see WEED-1.
VEG-2	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.
VEG-3	Where feasible, locate new access roads to minimize the number of trees to be removed during construction.
VEG-4	In areas where revegetation would be completed, topsoil salvage and replacement should be used for areas larger than 1 acre where soils would be disturbed during construction. In areas where revegetation would be completed, topsoil salvage will be used in all areas of cut or fill in order to facilitate revegetation.
VEG-5	The Proponents' employees and contractors will employ typical practices to prevent fire during construction and operations including brush clearing prior to work, stationing a water truck at the job site to keep the ground and vegetation moist in extreme fire conditions, enforcing red flag warnings, providing training to all pertinent personnel, keeping vehicles on designated roads and within work areas, and providing fire suppression and emergency notification numbers at each construction site. Brush clearing will be limited to the construction ROW.
VEG-6	The Reclamation, Revegetation, and Weed Management Plan must provide a site-specific plan for access road and ROW vegetation management in areas where removal of trees is proposed. The site-specific plan must include tree removal, slash disposal plans, and BMPs to avoid erosion or sedimentation of watercourses or wetlands. This plan will be submitted to each applicable land management agency for approval prior to clearing.
VEG-7	Herbicide use must conform to the existing types and application methods approved by those land managing agencies. The Reclamation, Revegetation, and Weed Management Plan must specify where herbicides would be used, what types would be used, and what application methods would be used. The plan must be in conformance with regulations regarding herbicide use from the land-managing agency or county in which herbicide use is proposed.
VEG-8	Prior to the start of construction and maintenance activities, all contractor vehicles and equipment (including personal protective equipment) shall be cleaned of soil and debris capable of transporting invasive plant seeds or other propagates. All vehicles and equipment shall 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, Revegetation, and Weed Management Plan will include the location of all cleaning stations, how materials cleaned from vehicles at these stations would 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	Agency staff will approve weed-free straw or other erosion control on federal lands prior to application.
VEG-10	Agency staff will approve tree seedlings planted in decommissioned roadbeds and other temporarily disturbed areas on federal lands to assure seedlings are matched to site conditions.
VEG-11	The Proponents will consult with appropriate Forest Service staff to identify the top soil layer on NFS lands.
VEG-12	Post-construction monitoring and treatment of invasive plants on closed roads and fly yards shall continue for at least 3 years. If after 3 years post-construction conditions are not equivalent or better than pre-construction conditions, monitoring and treatment will continue until these conditions are met.
VEG-13	The Proponents will meet Wyoming State Forest Practices Act requirements and apply Region 4 BMPs for timber removal operations on the Medicine Bow NF and meet Idaho State Forest Practices Act requirements and apply Region 2 BMPs for timber removal operations on the Caribou-Targhee and Sawtooth NFs.
VEG-14	Where the route would be visible on timbered slopes on lands managed by the Kemmerer FO, allow tree removal only at structure locations and where required for safety rather than from the entire ROW in order to prevent a linear feature on the landscape from clear-cutting trees. Vegetation removal requirements will consider Appendix A, Key Standards Relating to Electric System Reliability and Safety, of the MOU with the Edison Electric Institute (2006).

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
TES-PLANTS	
General	
Proponent Proposed EPMs	
OM-23	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).
OM-24	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-28	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	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.
Agency Proposed Mitigation Measures	
TESPL-3	Qualified botanists shall conduct pre-construction 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	Environmental monitors shall be used to identify and mark aboveground populations of slickspot peppergrass and higher-quality microsites within 50 feet of the construction area, including access roads, so that they are avoided by construction equipment and vehicles. Full field clearances shall be conducted that meet USFWS protocols prior to construction. No construction shall occur within 50 feet of any slickspot peppergrass plant or habitat, including known occurrences of slickspot peppergrass (based on Idaho CDC data) even if aboveground plants are not observed during the surveys. Seeding during reclamation must use methods that minimize soil disturbance such as no-till drills or rangeland drills with depth bands, in areas of suitable habitat. Reclamation must use certified weed-free native seed. Excess soils will not be stored or spread on slickspots.
TESPL-6	Sand dune and cushion plant communities should be avoided, where feasible.
Blowout Penstemon	
Proponent Proposed EPMs	
PPC-1	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.
Agency Proposed Mitigation Measures	
	None proposed
Goose Creek Milkvetch	
Proponent Proposed EPMs	
	None

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
TESPL-1	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.
Colorado Butterfly Plant	
Proponent Proposed EPMs	
PPC-2	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.
Agency Proposed Mitigation Measures	
	None proposed
Slickspot Peppergrass	
Proponent Proposed EPMs	
PPC-3	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.
Agency Proposed Mitigation Measures	
	None proposed
Ute Ladies'-tresses	
Proponent Proposed EPMs	
PPC-4	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.
Agency Proposed Mitigation Measures	
TESPL-2	Pre-construction surveys for the Ute ladies' tresses shall be conducted by qualified botanists in all areas of potential habitat, in accordance with federal land management agency and USFWS requirements. These pre-construction surveys shall be conducted during the appropriate survey window, for a total of 3 years.
TESPL-3	Qualified botanists shall conduct pre-construction 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.
Whitebark pine	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
TESPL-5	If a whitebark pine or limber pine (a similar species that can be difficult to distinguish from whitebark pine) stand cannot be avoided, off-site mitigation in the form of appropriate silvicultural treatments of adjacent stands, collection of seed, identification of "plus" trees or other acceptable mitigations will be done to offset the loss of the stand in addition to replanting whitebark pine on reclaimed areas.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
WEEDS	
Proponent Proposed EPMs	
REC-1	Company 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-2–15	[Described in Vegetation]
OM-14	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	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	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.
OM-22	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.
Agency Proposed Mitigation Measures	
WEED-1	The Proponents shall consult with each appropriate local land management agency (Forest Service and BLM) office or landowner to determine appropriate seed mix and commercial seed source for revegetation. The Reclamation, Revegetation, and Weed Management Plan must specify the approved seed mixes for each area (also see VEG-1).
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-3	Gravel and other materials used for road construction on federal lands shall come from certified weed-free sources.
WEED-4	Annual post-construction monitoring and treatment of invasive plants shall continue for at least 3 years. If after 3 years post-construction conditions are not equivalent or better than pre-construction conditions, monitoring and treatment will continue until these conditions are met (also see VEG-12).
WEED-5	During operations, access roads and maintenance areas shall be surveyed annually between May 1 and September 30 (or as determined by Agency staff) for the presence of new weed introductions and existing invasive plant species. Coordinate with Agency specialists to identify the most appropriate time for survey. A weed control program would be implemented if new weeds were found, which would define how and when these invasive plants would be treated. Weeds shall be treated before their seed heads have become viable, or if heads will become viable, whole plant removal of all weeds shall occur before seed drop occurs.
WEED-6	Soil stockpiles in areas containing invasive plants shall be reseeded or revegetated as soon as feasible, or the soil replaced in or near the original excavation. If requested by the applicable land-management agency, soil stockpiles shall be covered with plastic during the time prior to reseeding or replacement; however, plastic coverings will not be used on lands where the managing agency or landowner have requested that these piles not be covered with plastic (e.g., the Forest Service).
VEG-7	See description under Vegetation.
WETLANDS	
Proponent Proposed EPMs	
REC-1	[Described in Weeds]
REC-2–17	[Described in Vegetation]
REC-18	Topsoil and sub-surface soils will be replaced in the proper order during reclamation.
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 close 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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
REC-20	Re-contouring: 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	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.
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.
SW-1, 4–5	[See description under Water Quality]
SW-6	Migration of construction-related sediment to all adjacent surface waterbodies will be prevented.
SW-7–12	[See description under Water Quality]
SPC-1	Construction industry standard practices and BMPs will be used for spill prevention and containment.
SPC-2	Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.
SPC-3	All staging areas will contain fueling areas with containment. Where fueling must be conducted along the ROW, the plan will specify BMPs.
SPC-4	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-6	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-9	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.
Agency Proposed Mitigation Measures	
WET-1	Impacts on wetland and riparian areas shall be avoided unless physically or economically infeasible. Land management agencies' plans (RMPs 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 for fish-bearing and nonfish-bearing waters and wetlands will be followed.
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-4	To meet USACE requirements for CWA 404 permitting, the Proponents must submit a plan for mitigation and full compensation for all losses of waters of the United States. This plan must be approved by the USACE. The framework for this plan is included in the Draft EIS (see Appendix C-6) and must be fully detailed for the Final EIS.
Agency Proposed Mitigation Measures Adopted by the Proponents	
WET-3	Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts shall be submitted to the appropriate regulatory agency, as well as the land managing agency. The Proponent shall apply directly to the appropriate permitting agency (USACE and/or State agency) for approval.
Fish	
Proponent Proposed EPMs	
OM-18	See description under General
BLA-2	See description under Geologic Hazards

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
FISH-1	On BLM-managed land, all culverts, whether temporary or permanent, must be designed to meet BLM Manual 9113 standards. Culverts should be located, designed, constructed, and maintained according to standards that preserve or improve streambed gradients and velocities to allow fish passage and that minimize erosion and sediment damage. On federal lands, unless the applicable management plan has specific requirements for stream crossings, use the following for culverts in channels with less than 3 percent slope: • The minimum culvert width shall be equal to or greater than 1.5 times the active channel width. • The culvert shall be placed level (zero percent slope). • The bottom of the culvert shall be buried into the streambed at not less than 20 percent of the culvert height at the outlet, and not more than 40 percent of the culvert height at the inlet. Embedment does not apply to bottomless culverts. At sites where the channel slope is greater than 3 percent, additional consideration should be given to alternate design options such as bottomless arch culverts or fords (low-water crossings). This is because of the difficulty of providing for the passage of aquatic species through culverts installed at these sites. Also, the culvert would be installed so that its slope would match the average grade of the stream immediately up- and down-stream of the culvert site. Follow RMP guidelines where specific requirements are included. On NFS lands, Forest Plan standards and guidelines shall apply.
FISH-2	All in-stream construction actions will be conducted when critical fish life stages can be avoided as designated by the appropriate state and federal agencies. All culverts placed in fish habitat will be suitable, as determined by the federal or state agency, for passage by all life stages present or potentially present within the stream reach. Riparian vegetation removal should be kept to the minimum along fish bearing streams. Blasting in or adjacent to fish-bearing streams will require the state fish agency approval prior to blasting. Channel morphology data (e.g., streambank composition, bank slope, stream substrate characteristics, stream slope, riparian vegetation characteristics) will be obtained anywhere a road will cross a stream prior to construction and be used to restore the site of the crossing to pre-Project conditions when temporary roads are decommissioned.
FISH-3	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	If an aquatic invasive species is discovered during surveys for wetlands and waters of the U.S. conducted for USACE and state permitting prior to construction, the waterbody will be flagged and noted on the construction drawings. After work is complete in that 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 in the Analysis Area.
WILDLIFE	
General	
Agency Proposed Mitigation Measures	
WILD-1	Requests for exceptions from closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally-managed lands must be followed. The appropriate agency, or a contractor chosen by the Proponents and approved by the agency, shall 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 must 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.
WILD-12	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.
WILD-5	Surveys will be conducted within 0.5 mile of the route prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the applicable land management agency to determine appropriate protective measures.
Big Game	
Proponent Proposed EPMs	
	None proposed

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
WILD-2	Vehicular speeds during construction and operation shall be limited to 25 mph on all unsurfaced access roads. Crew and vehicle travel will be restricted to designated routes while on federally designated big game winter range (except for areas within the ROW).
WILD-1	See description under General Wildlife.
Raptors	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
WILD-4	On federal lands, accurate monitoring, including identifying nest occupancy, shall be conducted in order to ensure that raptor nests are located in advance of any construction activities. This would be needed to ensure that all construction activities would cease in areas near active nests. Biological monitor on site would perform these surveys ahead of construction. If an occupied nest is found, the appropriate restrictions and closures would be adhered to. All encounters of nesting raptors in the Analysis Area must be reported to the biological monitor and to appropriate agencies.
WILD-1	See description under General Wildlife.
WILD-6	As part of their annual aerial flight line maintenance activities, the Proponents will document perching and nesting activity (by species) on any towers constructed as a result of this Project. This would occur after the first year of construction until year 10 of operations. Results would be provided to the applicable land-management agency.
WILD-7	On federal lands, guy wires should be marked with bird deterrent devices to avoid avian collisions with structures on public lands (I.M. 2010-022).
WILD-8	Flight diverters will be installed and maintained where the transmission line crosses rivers at the locations identified in Table 3.10-3. The flight diverters will be placed on at least one of the higher conductors or ground wires at each crossing in order to reduce avian collisions. Additional locations may be identified by the Agencies.
WILD-3	The Project shall be designed and constructed in compliance with Avian Power Line Interaction Committee standards (APLIC 2006) 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 should also be in compliance with Avian Power Line Interaction Committee standards.
Agency Proposed Mitigation Measures Adopted by the Proponents	
WILD-9	Pre-construction pedestrian or aerial surveys will be completed during the appropriate nesting time periods needed to identify each raptor species. The Proponent will provide survey results to the authorized officer for approval (see WILD-1).
Within Antelope Fawning Areas	
Proponent Proposed EPMs	
PGC-1	No construction May 1 to May 30 in identified areas.
PGC-2	Weekly monitoring will commence May 15 and continue until PGC-3 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-3	If animals are present after May 15, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Antelope Critical Winter Range	
Proponent Proposed EPMs	
PGC-4	Weekly monitoring will commence November 15 in identified areas (see PGC-5). The Proponents will provide monitoring results to the appropriate land management agency.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
PGC-5	Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more antelope are seen in mapped habitat, and may not start work until March 1 at the earliest and if PGC-6 and 7 are met.
PGC-6	Weekly monitoring will be reinitiated, beginning February 15 and continue until PGC-7 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-7	If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Bighorn Sheep Lambing Grounds	
Proponent Proposed EPMs	
PGC-8	No construction May 1 to May 30 in identified areas.
PGC-9	Weekly monitoring will commence May 15 and continue until PGC-10 is met. The Proponents will provide monitoring results to the appropriate land management agency. .
PGC-10	If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Bighorn Sheep Critical Winter Range	
Proponent Proposed EPMs	
PGC-11	Weekly monitoring will commence November 15 in identified areas (see PGC-12).
PGC-12	Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once one or more bighorn sheep are seen in mapped habitat, and may not start work until March 1 at the earliest, and if PGC-13 and -14 are met.
PGC-13	Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-14 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-14	If animals are present, no construction until May 1, or until two consecutive weekly monitoring sessions confirm no animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Bighorn Sheep Year-long Habitat	
Proponent Proposed EPMs	
PGC-15	Surface disturbance is prohibited year-round within mapped habitat.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Elk Calving Areas	
Proponent Proposed EPMs	
PGC-16	No construction May 1 to May 30 in identified areas.
PGC-17	Weekly monitoring will commence May 15 and continue until PGC18 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-18	If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Elk Critical Winter Range	
Proponent Proposed EPMs	
PGC-19	Weekly monitoring will commence November 15 (see PGC-20).
PGC-20	Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more elk are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.
PGC-21	Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-22 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-22	If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Moose Calving Areas	
Proponent Proposed EPMs	
PGC-23	No construction May 1 to May 30 in identified areas.
PGC-24	Weekly monitoring will commence May 15 and continue until PGC-25 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-25	If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Moose Critical Winter Range	
Proponent Proposed EPMs	
PGC-26	Weekly monitoring will commence November 15 in identified areas (see PGC-27).
PGC-27	Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once one or more moose are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.
PGC-28	Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-29 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-29	If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Mule Deer Fawning Areas	
Proponent Proposed EPMs	
PGC-30	No construction May 1 to May 30 in identified areas.
PGC-31	Weekly monitoring will commence May 15 and continue until PGC-32 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-32	If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Within Mule Deer Critical Winter Range	
Proponent Proposed EPMs	
PGC-33	Weekly monitoring will commence November 15 in identified areas (see PGC-34).
PGC-34	Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more mule deer are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.
PGC-35	Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-36 is met. The Proponents will provide monitoring results to the appropriate land management agency.
PGC-36	If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Golden Eagle	
Proponent Proposed EPMs	
PRC-12	A pedestrian or aerial survey of known nest locations will be conducted weekly during the appropriate seasons, beginning no more than 2 weeks prior to construction. The Proponents will provide survey results to the appropriate land management agency.
PRC-13	If nesting eagles are present, monitoring will be conducted until the young have fledged or the nest fails, at which point construction can begin.
PRC-14	If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
All Other Raptors	
Proponent Proposed EPMs	
PRC-18	Pre-construction surveys will be conducted during the appropriate seasonal timeframe prior to construction, to identify active nests within 0.5 of a mile of the ROW within suitable habitat. The Proponents will provide survey results to the appropriate land management agency.
PRC-19	If an active nest is found during the protocol level surveys, construction is prohibited within 0.5 mile of the nest until monitoring shows that the young have fledged or the nest fails, whichever occurs sooner. The Proponents will provide survey results to the appropriate land management agency.
PRC-20	If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.
Agency Proposed Mitigation Measures	
WILD-1	See description under General Wildlife.
Migratory Birds	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
WILD-10	To the extent feasible, all vegetation clearing would be conducted prior to the onset of the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements), in order to limit the potential impact of clearing on nesting birds. In addition, pre-construction surveys within the disturbed portion of the ROW and extending a minimum of 30 feet on either side of the ROW shall be conducted. If an active nest is found during pre-construction surveys, the nest will be identified to species, flagged and avoided until any young have fledged. Avoidance distances are species-specific and must be approved by a USFWS-approved biologist.
WILD-11	Snags shall be maintained to the extent practical along the outer portions of the Project's ROW in order to reduce the impacts to habitat for cavity nesters.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
WILD-3	See description under Raptors.
TES-WILDLIFE	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
FISH-3	[See description under Fish]
WILD-3	[See description under Wildlife]
TESWL-1	For the protection of aquatic and riparian/wetland dependent species, surface disturbing and disruptive activities should 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 must be developed. These plans shall: 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 must be submitted to the appropriate land management agency and approved prior to construction of any portion of the Project within sensitive riparian habitat.
TESWL-2	The Proponents shall work with the applicable land-management agencies to develop a survey protocol that would be conducted in conjunction with annual operations and maintenance surveys (as outlined in the Proponent's Avian Protection Plans). The goal of these raptor-raven surveys shall be to identify whether populations of raptors and ravens are consolidating along the Project, and will be done during the appropriate time of year. These surveys shall be conducted, at a minimum, along portions of the line that are located within 1 mile of identified concentrations of sensitive raptor and raven prey species (including the black-footed ferret, mountain plover, burrowing owl, grouse species, as well as white- and black-tailed prairie dogs). The Proponents and applicable land-management agencies shall work together to identify measures to limit predation rates on sensitive species within areas where raptor and raven populations are considered to be consolidating (limited to areas near sensitive species).
TESWL-3	H-frame structures shall be equipped with anti-perch devices to reduce raven and raptor use, and limit predation opportunities on special status prey species.
Black-footed Ferret	
Proponent Proposed EPMs	
PMC-1	No surface disturbance would occur in black footed ferret non-block-cleared areas that are part of a white-tailed prairie dog complex that is greater than 200 acres and identified by USFWS as a potential black footed ferret reintroduction area (USFWS 1989) until cleared by species-specific presence/absence protocol level surveys.
PMC-2	Pre-construction presence/absence surveys (USFWS 1989) would be conducted in suitable habitat within mapped non-block-cleared areas, as necessary. Results of surveys would be valid for a 12-month period.
PMC-3:	In the event that black footed ferrets are documented, construction would cease within the vicinity of the documented occurrence and the USFWS would be notified. In addition, the transmission line or structures would be relocated to minimize direct impacts to prairie dog colonies to the extent possible.
Agency Proposed Mitigation Measures	
TESWL-4	In the event that an ESA listed species is discovered during surveys, construction would cease, the USFWS would be notified, and Section 7 consultation would be initiated. In addition, the transmission line or structures would be relocated to minimize direct impacts to newly discovered ESA species, to the extent practical.
TESWL-5	Pre-construction surveys must be conducted for the black-tailed prairie dog (in addition to those already proposed for the white-tailed prairie dog and the black-footed ferret) in Segments 1E and 1W. If prairie dogs or their habitat are documented, then surveys for black-footed ferrets must occur. If black-footed ferrets are found, construction in that area must halt and consultation with the USFWS be initiated. If black-tailed prairie dogs are discovered during construction, all construction activities must cease and a survey for the black-footed ferret shall be conducted. If black-footed ferrets are found, construction in that area must halt and consultation with the USFWS would be re-initiated.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Bald Eagle Active Nests	
Proponent Proposed EPMs	
PRC-1	A pedestrian or aerial survey of known nest locations within a 1 mile buffer of active project facilities will be conducted no more than 2 weeks prior to construction. The Proponents will provide survey results to the appropriate land management agency.
PRC-2	If nesting bald eagles are present, the USFWS will be notified and monitoring will be conducted until the young have fledged or the nest fails, at which point construction can begin.
PRC-3	If no nesting activity has been initiated by April 1, construction will be permitted for the remainder of the nesting season without further monitoring.
Agency Proposed Mitigation Measures	
TESWL-6	Requests for exceptions from bald eagle closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed (see WILD-1).
Bald Eagle Winter Roosts	
Proponent Proposed EPMs	
PRC-4	If roosting activity has been initiated, then no construction will be initiated within the prescribed buffer; however, if no roosting activity has been initiated by January 1, then construction will be permitted for the remainder of the roosting season without further monitoring.
Agency Proposed Mitigation Measures	
	None proposed
Ferruginous Hawk	
Proponent Proposed EPMs	
PRC-6	A pre-construction pedestrian or aerial survey will be conducted two weeks prior to construction, to identify active nests within 1 mile of the ROW.
PRC-7	If an active nest is present, monitoring will be conducted until the young have fledged or the nest fails, whichever occurs sooner, and no surface-disturbing activities will occur within 1 mile of the nest while the nest is active. Monitors will observe the nests from an appropriate distance to avoid disturbing birds.
PRC-8	If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.
Agency Proposed Mitigation Measures	
TESWL-20	Requests for exceptions from ferruginous hawk closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed (see WILD-1).
Flammulated Owl	
Proponent Proposed EPMs	
PRC-9	Pre-construction protocol level surveys (USFS 1993, 2008) will be conducted during the appropriate seasonal timeframe prior to construction in suitable habitat, to identify active nests within 0.25 of a mile of the ROW. The Proponents will provide survey results to the appropriate land management agency.
PRC-10	If an active nest is found during the protocol level surveys, construction is prohibited within 0.25 mile of the nest until monitoring shows that the young have fledged or the nest fails, whichever occurs sooner.
PRC-11	If no active nests are detected during the pre-construction protocol surveys, construction will occur without further monitoring.
Agency Proposed Mitigation Measures	
TESWL-21	Requests for exceptions from northern goshawk closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed (see WILD-1).
Northern Goshawk	
Proponent Proposed EPMs	
PRC-15	Pre-construction pedestrian surveys (USFS 1993, 2008) will be conducted during the appropriate seasonal timeframe prior to construction in suitable habitat, to identify active nests within 0.5 of a mile of the ROW within suitable habitat. The Proponents will provide survey results to the appropriate land management agency.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
PRC-16	If an active nest is found during the protocol level surveys, construction is prohibited within 0.25 mile of the nest until monitoring shows that the young have fledged or the nest fails, whichever occurs sooner, and no surface-disturbing activities will occur within 0.5 mile of the nest while the nest is active.
PRC-17	If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.
Agency Proposed Mitigation Measures	
	None proposed
Pygmy Rabbit	
Proponent Proposed EPMs	
PMC-4	The year prior to construction, protocol level surveys (Ulmschneider 2004) would be conducted in suitable habitat (defined by both Project-specific mapping conducted in 2008 and agency habitat mapping) within 300 feet of and including the ROW. Survey results shall be provided to the appropriate land management agency. (A distance of 300 feet was chosen because burrow systems have been found to extend to approximately 300 feet [Bradfield 1974].)
PMC-5	During the protocol level surveys, any areas of occupied habitat will be mapped with a GPS unit. No surface disturbances of active burrows will occur.
PMC-6	Where feasible and if needed, the transmission line would be microsited to avoid occupied habitat.
PMC-7	Within 30 days prior to construction, previously occupied habitat would be re-visited to document presence using protocol level surveys (Ulmschneider 2004). Occupied habitat would be re-mapped electronically and flagged in the field to allow additional micrositing to avoid the occupied habitat to the extent possible.
Agency Proposed Mitigation Measures	
	None proposed
Wyoming Pocket Gopher	
Proponent Proposed EPMs	
PMC-8	Protocol level surveys (Keinath and Beauvais 2006) would be conducted within suitable habitat in Segments 2, 3, and 4, in order to determine species presence in areas that could be impacted by Project components. Proponents will provide survey results to the appropriate land management agency.
PMC-9	All ground disturbances would be avoided to the extent practical where the Wyoming pocket gopher is documented.
PMC-10	Previously documented occurrences of the Wyoming pocket gopher would be avoided during operation and maintenance activities.
Agency Proposed Mitigation Measures	
	None proposed
Burrowing Owl	
Proponent Proposed EPMs	
PRC-5	Within 30 days prior to construction, protocol level surveys (CDOW 2007) will be conducted in suitable or occupied habitat. Active burrows will be mapped electronically and flagged in the field to determine if transmission line features can avoid burrows. If avoidance is not feasible, construction will not begin until August 16. The Proponents will provide survey results to the appropriate land management agency.
Agency Proposed Mitigation Measures	
TESWL-7	Requests for exceptions from burrowing owl closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed (see WILD-1).
TESWL-8	A wildlife biologist will accompany site engineers during the final engineering design, in order 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, known burrowing owl burrows (including 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 routed to avoid direct impact to these occupied structures to the extent practical.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Sharp-tailed Grouse	
Proponent Proposed EPMs	
PAC-1	All previously identified Columbian sharp-tailed grouse leks within 1 mile of the center line of the Project will be surveyed during the breeding season (March 15 to June 15) prior to construction to determine if the lek is active. If no lek activity is observed by April 15th, no further restrictions apply for that year. Measures PAC-2, -3, and -4 will not apply if lek is not active. The Proponents will provide survey results to the appropriate land management agency.
PAC-2	Surface disturbance will be prohibited year-round within 0.25 mile of previously documented leks.
PAC-3	No surface disturbance from 0.25 mile to 0.65 mile of a known active lek from March 1 to June 30. If no lek activity is observed by April 15th, no further restrictions apply for that year. If lek activity is observed, surface disturbance from 0.25 mile to 0.65 mile may not occur until after June 30.
PAC-4	Surface disturbance occurring more than 0.65 mile from the lek may occur at any time.
PAC-5	Notification will be placed in areas frequented by on-site personnel (such as break rooms) to advertise the importance of complying with these restrictions.
PAC-6	Operation and maintenance activities will be scheduled to avoid working within 0.65 mile of previously documented leks from March 15 to July 15.
Agency Proposed Mitigation Measures	
TESWL-9	Requests for exceptions from Columbia sharp-tailed grouse closure periods and areas must be submitted by the Proponents to the appropriate land-management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed (see WILD-1).
TESWL-10	Proponents shall provide the Agencies a list of the protocols that the Proponents would use during greater sage-grouse and sharp-tailed grouse pre-construction surveys. The Agencies shall either approve these protocols, or suggest alternative protocols to be used.
TESWL-11	In areas where sharp-tailed grouse leks occur in proximity to greater sage-grouse leks, surface disturbance shall 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 shall be avoided within 1.2 miles of occupied or undetermined sharp-tailed grouse leks from March 15 to July 15.
Mountain Plover	
Proponent Proposed EPMs	
PAC-19	Pre-construction protocol level surveys (USFWS 2002b) will be conducted during the appropriate seasonal timeframe prior to construction in suitable habitat, to identify active nests within 0.25 mile of the ROW. If no nests are found, construction can commence. The Proponents will provide survey results to the appropriate land management agency.
PAC-20	If an active nest is found during the protocol level surveys, monitoring will be conducted until the young have fledged or the nest fails, whichever occurs sooner, and no surface-disturbing activities will occur within 0.25 mile of the nest while the nest is active.
PAC-21	If no active nests are discovered during the pre-construction surveys (USFWS 2002b), construction will be permitted for the remainder of the nesting season without further monitoring.
Agency Proposed Mitigation Measures	
TESWL-12	Requests for exceptions from mountain plover closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally-managed lands must be followed (See WILD-1).
Three-toed Woodpecker	
Proponent Proposed EPMs	
PAC-22	Pre-construction protocol level surveys will be conducted during the appropriate seasonal timeframe prior to construction in suitable habitat, to identify active nests within the ROW.
PAC-23	If an auditory response is received and an active nest is found, monitoring will be conducted until the young have fledged or the nest fails, whichever occurs sooner, and no surface-disturbing activities will occur within 0.25 mile of the nest while the nest is active. The Proponents will provide survey results to the appropriate land management agency.
PAC-24	If no nests are discovered, construction will be permitted for the remainder of the nesting season without further monitoring.
Agency Proposed Mitigation Measures	
	None proposed

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Columbia spotted frog	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-1	See the description under TES Wildlife above
Yellow billed cuckoo	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-13	A pre-construction survey for the yellow-billed cuckoo must be conducted at any proposed crossing of suitable habitat. If these birds are detected within 1 mile of the centerline (within existing habitat), construction must not occur until the young have fledged or the nest is abandoned. The crossing-specific plan must contain proposed monitoring measures to assure compliance with this measure.
Midget faded rattlesnake	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
TESWL-18	Pre-construction surveys for occupied or potential midget faded rattlesnake hibernacula (i.e., rock outcrops with south to east aspect) will be conducted.
Sage-Grouse	
Proponent Proposed EPMs	
PAC-7	All greater sage-grouse leks determined to be within 1 mile of the centerline of the Project would be surveyed using protocols, which have been approved by federal and state agencies, during the breeding season immediately prior to construction to determine whether the lek is active. The Proponents will provide survey results to the appropriate land management agency.
PAC-8	There would be no construction activities through Idaho's key and restoration greater sage-grouse habitats and Wyoming's core habitats within 1 mile of active leks from March 1 to May 15 between 6 p.m. and 9 a.m. Off-limit areas would be marked so that workers in the area are aware of these sensitive areas.
PAC-9	If no lek activity has been observed by April 25, construction activities may proceed.
PAC-10	Surface disturbance would be prohibited year-round within 0.25 mile of previously documented leks.
PAC-11	Notification would also be placed in areas frequented by on-site personnel (such as break rooms) to advertise the importance of complying with these restrictions.
PAC-12	Temporal and spatial restrictions do not apply when lek or nesting and brood rearing habitat is separated from Project activities by other forms of human disturbance (e.g., agriculture, highways) or by line of sight barriers.
Agency Proposed Mitigation Measures	
TESWL-14	Surface disturbance shall be avoided within 0.6 to 4 miles of occupied or undetermined greater sage-grouse leks from March 15 to July 15 in all portions of the Project except for Nevada. In Nevada, surface disturbance shall be avoided within view of or within 0.3 mile of all leks from March 1 to May 15; and within areas designated by Nevada as greater sage-grouse brood rearing areas from May 15 to August 15..
TESWL-15	There shall be no surface occupancy (NSO) within 0.6 mile of the perimeter of occupied greater sage-grouse leks. "No surface occupancy," as used here, means no surface facilities, including roads, shall be placed within the NSO area. Other activities may be authorized with the application of appropriate seasonal stipulations, provided the resource's protected area is not adversely affected.
TESWL-16	Requests for exceptions from greater sage-grouse closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally-managed lands must be followed (See WILD-1).

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
TESWL-19	There shall be no surface disturbances within areas designated as Winter Concentration Areas for the greater sage-grouse from November 1 through March 15.
TESWL-22	No structures that require guy wires would be used in occupied sagebrush obligate habitats within the area managed under the Kemmerer RMP.
TESWL-23	If the Kemmerer RMP is amended to allow Alternatives 4A, 4C, 4E, or 4F to be selected, existing fences within 1 mile of the portion of the Gateway West Project located on lands managed by the Kemmerer RMP shall 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, may also be required to off-set the net loss of sagebrush habitats within the Rock Creek/Tunp management area.
Colorado River T&E Fishes	
Agency Proposed Measures Adopted by the Proponents	
TESWL-17	A payment of a one-time fee, based on a fee schedule provided by the USFWS, shall be made based on the amount of water used during construction of any segments that cross the Colorado River system.
MINERALS	
Proponent Proposed EPMs	
	None proposed
Agency Proposed Mitigation Measures	
MN-1	A geotechnical investigation will be conducted by the Proponents in areas where abandoned underground mines are known to occur to determine the presence of methane and the likelihood of subsidence.
MN-2	An accounting of damages will be conducted by the Proponents to current operators to determine the potential loss of mineral resources. There may be mining claims under the 1872 Mining Law that would have precedence over the Project. Similarly, federal and state mineral lease agreements provide rights to lessees that could interfere with the Gateway West Project. The Proponents will resolve mineral claim and lease agreements prior to Project initiation, as with site access agreements on private property.
PALEONTOLOGICAL RESOURCES	
Proponent Proposed EPMs	
CUL-1–3	[See description under Cultural Resources]
CUL-9	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.
Agency Proposed Mitigation Measures	
PALEO-1	The Proponents shall prepare a Paleontological Monitoring Plan for the Project, focusing on Segments 4, 7, 8, and 9 where the potential for adverse impacts is the greatest. This plan shall be submitted to appropriate agencies for review and approval prior to commencing construction. The plan should 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 microvertebrate 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.
PALEO-3	Areas with Fossil Potential Classification sensitivity rankings of 3, 4, or 5 on NFS lands will be surveyed and posted.
Agency Proposed Mitigation Measures Adopted by the Proponents	
PALEO-2	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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
GEOLOGIC HAZARDS	
Proponent Proposed EPMs	
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	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).
Agency Proposed Mitigation Measures	
GEO-1	A site-specific landslide mitigation plan that addresses measures to be taken in the design, construction, and operation to minimize failure due to landslides must be prepared and submitted by the Proponents with the construction POD prior to issuance of a ROW grant on federally managed lands.
GEO-3	On-site slope stability examinations will be performed on NFS lands for slopes over 40 percent prior to designing project features that require the removal of forest.
GEO-4	A site-specific soil analysis shall be conducted prior to construction to verify any areas identified as unstable or marginally unstable in the Caribou National Forest Soil Resource Inventory.
Agency Proposed Mitigation Measures Adopted by the Proponents	
GEO-2	Review the final location of the preferred alternative with affected mine operators and lessees to ensure all measures are taken to protect against subsidence.
SOILS	
Proponent Proposed EPMs	
SW-1, 4, 5, 7–12	[See description under Water Quality]
SW-2, 3	[See description under Water Quality]
SW-6	[See description under Water Quality]
SW-13	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-1–4, 6	[See description under Wetlands]
SPC-5	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-7	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.
SPC-8	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-10	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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
SOIL-1	Efforts will be made to preserve topsoil and minimize mixing with subsoil. In agricultural areas, the landowner or land management agency will be asked to provide input on placement of removed topsoil. The Wyoming State Reclamation Policy and applicable Agency management plan requirements for soil management will be followed. Soil disturbances in agricultural areas will be developed to minimize impacts to existing agricultural activities where possible. Unless the landowner or land management agency specifically approves otherwise, the Proponents will prevent the mixing of topsoil with subsoil by stripping topsoil from the portion of the construction work area that will be restored (construction pad, storage yards, and fly yards) in actively cultivated or rotated croplands and pastures and other areas at the landowner's or land-managing agency's request. Where topsoil segregation is required, the Proponents will maintain separation of salvaged topsoil and subsoil throughout all construction activities. Immediately after construction, topsoil will be restored to the areas not dedicated to operational requirements and revegetated as specified in the EPMs.
SOIL-5	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.
SOIL-7	The Proponents are responsible for monitoring to ensure soil protection is achieved, and providing monitoring reports on reseeding success or other methods to stabilize soils to the Forest Service by the end of each growing season for areas on NFS lands.
SOIL-8	Reclamation of all temporary disturbances on NFS lands (such as road cuts) should include replacement of material to original contours. Re-compaction to pre-existing compaction percentage (which should be identified before disturbance) should be included in the plan. 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-9	On federal land, follow land management plan requirements on the location of waste material (silt, sand, gravel, soil, slash, debris, chemical, etc.)
SOIL-10	On NFS lands, soil resources will be inventoried to National Cooperative Soil Survey Standards, and volumes and suitability of soil resources for reclamation will be determined prior to disturbance.
SOIL-11	In specific sensitive areas (such as erosive soils, steep slopes) on lands managed by the Kemmerer FO, the access road used for construction will be restored and an alternative access route for operations designated.
Agency Proposed Mitigation Measures Adopted by the Proponents	
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	During decommissioning, some obviously compacted areas, such as established service 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-4	Reclamation will include revegetation unless pre-existing conditions were not vegetated (rocky areas, agricultural fields). On public land the appropriate agency will provide input on the extent of reclamation, the type of vegetation to be planted, and the monitoring necessary to ensure reclamation success.
SOIL-6	Detrimental soil disturbance such as compaction, erosion, puddling, and displacement will be limited or mitigated to meet long-term soil productivity goals on NFS lands. Treatment should 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.
WATER RESOURCES/AQUATIC	
Proponent Proposed EPMs	
SW-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	NPDES permit requirements will be met. This includes implementing and maintaining appropriate BMPs for minimizing impacts to surface water.
SW-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	The SWPPPs will be modified as necessary to account for changing construction conditions.
SW-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	Stormwater BMPs will be maintained on all disturbed lands during construction activities, as described in the SWPPP.
SW-8	Approved sediment and erosion control BMPs will be installed and maintained until disturbed areas meet final stabilization criteria.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
SW-9	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	The construction schedule may be modified to minimize construction activities in rain-soaked or muddy conditions.
SW-11	Damaged temporary erosion and sediment control structures will be repaired in accordance with the SWPPP.
SW-12	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.
SPC-1–4, 6, 9	[See description under Wetlands]
SPC-5, 7, 8, 10	[See description under Soils]
Agency Proposed Mitigation Measures Adopted by the Proponents	
WQA-1	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	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-5	On non-federal lands, culvert placement should comply with state BMPs. The minimum size culvert will be 12 inches in diameter. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. Filter cloth should be placed on the streambed and banks prior to placement of the pipe, and the culvert should be covered with a minimum of 1 foot of aggregate.
WQA-3	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	Culvert sizing on NFS lands should also comply with *Guidance for Aquatic Species Passage Design, Forest Service Northern Region & Intermountain Region* (Forest Service 2003f) , and culvert sizing on BLM-administered land shall comply with BLM Manual 9113.
SOIL-4	[See description under Soils]
VEG-3, -6	[See description under Vegetation]
FISH-1, -2	[See description under Fish]
LAND USE	
Proponent Proposed EPMs	
TR-7	Unauthorized vehicles will not be allowed within the construction right-of-way (ROW) or along roadsides near the ROW.
Agency Proposed Mitigation Measures	
LU-1	To assist agency and county law enforcement in minimizing unauthorized OHV use on public and private lands, monitor OHV use and post signs along access roads where OHV activity has increased in areas on public lands where OHVs are regulated 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. Consult with appropriate Agencies on additional measures to block unauthorized OHV use.
LU-2	Coordinate with the Foxley Airstrip owner to realign the location of Alternative 1E-C to eliminate the impact to the airstrip or in some manner compensate for any loss of use.
LU-3	Work with the private landowner of the ice cave along Alternative 1E-C and microsite the facilities during final design to reduce effects.
LU-4	Coordinate with the Chokecherry-Sierra Madre Wind Farm and TransWest Express Project developers and BLM along the Segment 2 Proposed Route to ensure mutually compatible siting of transmission lines and wind energy facilities.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
LU-5	Work with the owners of potentially affected industrial buildings and microsite the transmission line during final design to avoid impact to these structures.
LU-6	Review the final location of the Segment 3 Proposed Route with any affected oil/gas well operators to ensure measures are taken to protect against any impacts to wells. This measure also applies to any segment where the Proposed Route would be near oil/gas wells.
LU-7	Once the final locations of towers where crossings of the MTR would occur are known, IDANG should be consulted to ensure that the proper information is made available for proper warnings.
LU-8	Coordinate with the owner of the planned Dry Creek Sky Ranches airstrip to realign the Segment 7 Proposed Route or airstrip or in some way compensate for loss of use.
LU-9	Alternative 8C along Segment 8 should be realigned in the vicinity of the Mayfield Springs subdivision during final design to reduce impact on the planned Mayfield Springs community.
LU-10	Consult with the IDANG to determine if the Segment 8 Proposed Route can be sited in such a way as to not compromise the training mission in the Alpha Maneuver Sector of the Orchard Training Area, thereby avoiding relocation of the existing transmission line if possible.
LU-11	Consult with the BLM to determine how best to construct and maintain the Proposed Route transmission line through the area closed to motorized vehicles along the Snake River to ensure no impacts to existing natural, cultural, and historic resources.
AGRICULTURE	
Proponent Proposed EPMs	
REC-13, REC-18, & OM-29	See description under Vegetation.
REC-21	See description under WETLANDS.
Agency Proposed Mitigation Measures	
AGRI-1	Provide for a qualified Agricultural Specialist to assist construction planning, construction, restoration, post-construction monitoring, and follow-up restoration.
AGRI-2	Maintain an active program of liaison with landowners and tenants, including specific points of contact whose responsibilities shall include pre-construction inventory, notices, complaint resolution, damage assessment, and negotiation and compensation.
AGRI-3	Establish procedures for determining ingress and egress routes with landowners and tenants, protection methods for off-ROW roads over agricultural lands and on ROW pads, including methods such as geotextile matting to segregate temporary rock fill.
AGRI-4	Establish the location of temporary roads to be used for construction purposes through negotiation with the landowner, with existing farm lanes or two tracks as preferred temporary access roads, restoring temporary access roads to pre-construction condition and leaving temporary access roads intact through mutual agreement with the landowner and tenant unless located in flood areas or drainage hazard areas, or otherwise restricted by federal, state, or local regulations.
AGRI-5	Maintain landowner and tenant access across construction areas for farm equipment and livestock to fields isolated by construction activities and install temporary fences and gates across the construction area, as necessary, to facilitate agricultural operations.
AGRI-6	Protect topsoil by stripping and segregating topsoil in the disturbance area on agricultural lands unless negotiated differently with the landowner or tenant. They shall prevent segregated topsoil from being mixed with cut-and-fill materials, rock, construction debris, excavated materials, or other subsoil.
AGRI-7	Restrict the operation of vehicles and heavy equipment, or take other appropriate action, so that deep rutting does not result in mixing of topsoil and subsoil on excessively wet soils on the portion of the construction work area in agricultural land where the topsoil is not stripped.
AGRI-8	Protect irrigation operations and drain tiles by 1) contacting landowners and tenants to identify the location of irrigation systems and wells, identified underground irrigation water pipes, well systems, and drain tiles that intersect the construction area; 2) repairing disrupted irrigation and drain tile systems as soon as possible; 3) maintaining the flow of irrigation water during construction or coordinating a temporary shut-off with affected parties; and 4) compensating affected parties for crop losses that result from irrigation and drain tile system interruptions due to construction.
AGRI-9	Protect agricultural lands from dewatering activities by pumping into a constructed energy-dissipating structure that shall minimize damage to adjacent agricultural land, drainage systems, and crops.
AGRI-10	Restore the land to the pre-construction condition or provide compensation.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
AGRI-11	Decompaction of exposed subsoil before topsoil replacement shall be accomplished utilizing an agricultural subsoiler or other appropriate implement. After decompaction and prior to topsoil replacement, a disc or harrow shall be utilized, as necessary, to smooth the subsoil surface.
AGRI-12	Following final grading and topsoil replacement in agricultural lands, deep tillage shall be used to relieve soil compaction in construction areas or the Proponents shall test soils for compaction at regular intervals. Where soil compaction is tested, construction areas shall be compared to adjacent areas not disturbed by construction.
AGRI-13	Decompact agricultural lands where topsoil has not been removed by using a non-inversion, deep-tillage agricultural subsoiler specifically designed for soil decompaction and designed to minimize surface disturbance and the mixing of subsoil with topsoil.
AGRI-14	Existing range improvements that are damaged or modified during construction shall be repaired. Additionally, temporary fences and gates shall be removed after construction if requested by landowner or land-management agency.
AGRI-15	If a dairy farm reports problems with stray voltage, complete a free, on-site investigation and determine the level of voltage and fix any problems resulting from their transmission line to less than 1 volt.
AGRI-16	Align the transmission line to avoid the CAFO approximately 14.5 miles east of the proposed Cedar Hill Substation if this route is approved.
AGRI-17	Realign the transmission line route during final design to avoid affecting any CAFOs.
AGRI-18	Consult with the Farm Service Agency and landowners to determine if construction would affect the CRP status of the land currently enrolled in CRP or if special construction or revegetation techniques would be necessary.
TRANSPORTATION	
Proponent Proposed EPMs	
TR-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-2	[See description under Air Quality]
TR-3	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.
TR-4	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	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	To reduce traffic congestion and roadside parking hazards, an equipment yard will be provided for primary parking for employee personal vehicles.
TR-7	[See description under Land Use]
TR-8	Construction vehicles will follow a 25 mph speed limit on unposted project roads.
TR-9	All temporary culverts and associated fill material will be removed from stream crossings after construction, and banks will be re-contoured to their pre-disturbance conditions.
TR-10	Landowners will be notified at least 48 hours prior to the start of construction within 0.25 mile of a residence.
TR-11	Emergency vehicle access to private property will be maintained.
TR-12	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	Roads negatively affected by construction and as identified by the agencies, will be returned to pre-construction condition.
TR-14	Roads developed specifically for this project that are identified by the Proponents as no longer necessary will be reclaimed as specified in the Reclamation, Revegetation, and Weed Management Plan.
Agency Proposed Mitigation Measures Adopted by the Proponents	
TRANS-1	The Proponents will attempt to identify existing two-track trails as preferred temporary access roads for construction.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
TRANS-2	Temporary roads will be designed so proper drainage is not impaired and will be built to minimize soil erosion on or near the temporary roads. Consult with appropriate Agencies on additional design measures.
TRANS-3	Permanent and temporary roads on NFS lands and BLM-administered lands will be consistent with appropriate National Forest and BLM Transportation Management Plans, as amended, and other applicable rules. Permanent roads built for the Project on NFS lands and BLM-administered lands shall be closed to the public. 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. Proponents will monitor permanent roads on NFS land and BLM-administered lands yearly, and the applicable land-managing agency shall be provided with annual monitoring reports. Roads will be maintained as required by the Special Use Permit.
TRANS-4	Upon abandonment, temporary access roads 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.
AIR QUALITY	
Proponent Proposed EPMs	
TR-2	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.
Agency Proposed Mitigation Measures	
VEG-5	[See description under Vegetation]
Agency Proposed Mitigation Measures Adopted by the Proponents	
AIR-1	Minimize idling time for diesel equipment whenever possible.
AIR-2	Ensure that diesel-powered construction equipment is properly tuned and maintained, and shut off when not in direct use.
AIR-3	Prohibit engine tampering to increase horsepower.
AIR-4	Reduce construction-related trips as feasible for workers and equipment, including trucks.
ELECTRICAL ENVIRONMENT	
Proponent Proposed EPMs	
	None Proposed
Agency Proposed Mitigation Measures Adopted by the Proponents	
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	
Proponent Proposed EPMs	
BLA-1	[See description under Geologic Hazards]
BLA-2	[See description under Geologic Hazards]
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.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
Agency Proposed Mitigation Measures	
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	Equip all construction equipment operating with internal combustion engines with spark arresters.
FIRE-3	Restrict motorized equipment, including worker transportation vehicles, to the designated and approved work limits.
FIRE-4	Clear equipment parking areas, the ROW, staging areas, and designated vehicle-parking areas of all flammable material.
FIRE-5	Require all motor vehicles and equipment to carry, and individuals using handheld power equipment to have, specified fire prevention equipment.
FIRE-6	Provide a list of equipment capable of being adapted to fighting fires to local fire protection agencies.
FIRE-7	Notify the appropriate fire suppression agencies of scheduled road closures.
FIRE-8	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	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	Restrict or cease operations on federal lands during periods of high fire danger at the direction of the responsible land-managing agency representative.
FIRE-11	Use direct control for emergency the wildland fire control. When possible, where fire suppression is necessary, use techniques, which minimize soil and vegetation disturbance.
ENV-1	After a route has been selected and before construction, the route would be reviewed for areas within 0.5 mile of petroleum or gas pipelines, oil or gas wells, municipal solid waste landfills, service stations, railroads, municipal landfills, caves, and active and abandoned mines. The locations intersected by the route and these facilities would be compared against state Department of Environmental Quality databases which contain the locations of contaminated facilities and sites undergoing remediation. If contaminated sites are identified, further information would be obtained from Department of Environmental Quality personnel, and the authorized officer would be notified.
ENV-2	Construction crews would be trained to look for pre-existing environmental contamination. Indications of contamination could include mine waste rock stockpiles, drums or containers of unknown products, discolored soil, or unusual soil odors. Should indications of contamination be encountered, all surface disturbing activities in the vicinity of the contamination would cease. The location would be marked and project access restricted to eliminate the spread of contamination by construction equipment. The authorized officer would be notified, and the applicable Department of Environmental Quality personnel, and property owner or land management agency informed. To protect site workers, and minimize environmental effects, no work would occur at this location until the environmental conditions have been resolved. The Proponents would not assume responsibility for discovery of pre-existing contamination.
NOISE	
Proponent Proposed EPMs	
BLA-1	[See description under Geologic Hazards]
BLA-2	[See description under Geologic Hazards]
BLA-3	[See description under Public Safety]
BLA-4	[See description under Public Safety]
BLA-5	[See description under Public Safety]
Agency Proposed Mitigation Measures	
NOISE-1	Provide notice by mail prior to construction to all sensitive receptors and residences within 300 feet of construction sites, staging areas, and access roads. The announcement will state specifically where and when construction will occur in the area.
Agency Proposed Mitigation Measures Adopted by the Proponents	
NOISE-2	Identify and provide a public liaison person before and during construction to respond to concerns of neighboring receptors, including residents, about noise construction disturbance.

Table 2.7-1. Proponent and Agency Proposed Mitigation Measures (continued)

Number	Description
NOISE-3	Establish a toll-free telephone number for receiving questions or complaints during construction and develop procedures for responding to callers.
NOISE-4	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.

AGRI – agricultural resources; AIR – air resources; BLA – blasting; CR – cultural resources; CUL – cultural resources; EE – electrical environment; FIRE – fire; GEO – geological resources; LU – land use; MN – mineral resources; OM – operation & maintenance; PAC – proposed avian conservation; PALEO – paleontological resources; PGC – wildlife; PMC – proposed mammal conservation; PPC – proposed plant conservation; PRC – proposed raptor conservation; REC – recreational resources; SOC – socioeconomic resources; SOIL – soil resources; SPC – spill prevention; SW – stormwater; TESPL – TES plants; TESWL – TES wildlife; TR – transportation resources; TRANS – transportation resources; VEG – vegetation; VIS – visual resources; VR – visual resources; WILD – wildlife

2.8 SUMMARY COMPARISON OF EFFECTS OF ALTERNATIVES

Sections 2.8.1 through 2.8.8 are a summary by segment of the environmental effects of the 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 2.8.8 present the 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 C. Residual impacts identified after implementation of the EPMs were further mitigated where appropriate with resource-specific measures identified in Chapter 3. EPMs would apply to all Action Alternatives. Additional mitigation measures identified by the Agencies would apply to all alternatives; however, they would only apply to federal land (except for measures required by the USFWS to meet requirements under the ESA).

2.8.1 Alternatives 1E-A, 1E-B, and 1E-C Compared to the Proposed Route

Segment 1E of the Proposed Route was developed to avoid multiple transmission lines on private lands in the Dave Johnston – Rock Springs transmission corridor in the north and to access planned wind energy resources in the southeast. Among the key factors considered in routing this segment were visual resources, wildlife resources (sage-grouse, big game winter range, and nesting raptors), and geologic features (an ice cave). Table 2.8-1 compares effects to a range of resources under each Route Alternative. Figure A-2 in Appendix A shows the Proposed Route and Route Alternatives.

Alternative 1E-A was developed as an alternative to the northern segment of the Proposed Route in response to visual and land use impact concerns expressed by local citizens along the Proposed Route. This alternative would minimize the effect of separate transmission lines on private lands located along the existing Dave Johnston – Rock Springs transmission line corridor. Alternative 1E-A is shorter than the comparison portion of the Proposed Route (16.1 miles vs. 17.6) but would have more impacts on visual resources as seen from residences in the Glenrock area. This alternative would parallel an existing transmission line corridor (Segment 1W[c]) for over 80 percent of its length versus approximately 2 percent for the comparison portion of the Proposed Route. However, if Segment 1W(a) of the Proposed Route is built as proposed, Segment 1E of the Proposed Route would be adjacent to the 1W(a) line for approximately half of its length. Alternative 1E-A would cross more big game winter range (30.8 miles vs. 28.0) but less sage-grouse core area (0.5 acre vs. 8.9) than the comparison portion of the Proposed Route. This alternative would be within the buffer of one raptor nest whereas the comparison portion of the Proposed Route would not.

Table 2.8-1. Alternatives 1E-A, 1E-B, and 1E-C Compared to the Proposed Route

Comparison Features	Unit	Proposed Segment 1E Total Length	Proposed Comparison Portion for Alt. 1E-A	Alternative 1E-A	Proposed Comparison Portion for Alt. 1E-B	Alternative 1E-B	Proposed Comparison Portion for Alt. 1E-C	Alternative 1E-C
General								
Total Length	miles[1/]	100.6	17.6	16.1	37.9	59.3	75.4	48.7
Construction Disturbance Area	acres[2/]	1,096	213	125	393	729	832	311
Operations Disturbance Area	acres	283	51	39	91	164	218	92
Land Ownership and Use								
BLM	miles	11.6	–	–	3.8	8.7	11.2	24.0
Forest Service	miles	2.8	–	–	–	–	2.8	2.1
Other federal	miles	–	–	–	–	–	–	–
State	miles	22.0	11.4	6.6	3.9	4.9	8.2	8.3
Private	miles	64.0	6.1	9.5	30.1	45.6	53.2	14.2
Indian Reservation	miles	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	–	–	–	–	–	–	4.8
Within or Adjacent to Existing Transmission Corridors	miles	13.9	3.9	14.2	–	–	2.4	24.5
Resource Summaries								
Visual								
Forest Service Modification SIO crossed	miles	2.8	–	–	–	–	2.8	2.0
VRM I or II crossed	miles	5	–	–	–	2.6	4.8	0.9
Cultural								
Potentially affected cultural resources	number	74	29	37	16	28	31	23
Historic trails crossed	number	2	2	2	0	2	0	0
Wildlife								
Designated big game winter range crossed	miles	85.2	28.0	30.8	25.3	58.8	49.1	32.3
Big game parturition range crossed	miles	–	–	–	–	–	–	–
Raptor nests within 1 mile	number	14	–	1	11	12	14	6

Table 2.8-1. Alternatives 1E-A, 1E-B, and 1E-C Compared to the Proposed Route (continued)

Comparison Features	Unit	Proposed Segment 1E Total Length	Proposed Comparison Portion for Alt. 1E-A	Alternative 1E-A	Proposed Comparison Portion for Alt. 1E-B	Alternative 1E-B	Proposed Comparison Portion for Alt. 1E-C	Alternative 1E-C
Sage-grouse core area crossed	miles	37.2	8.9	0.5	15.4	–	20.8	17.8
Vegetation								
Forest and woodland vegetation removed (construction) [4/]	acres	318	–	1	15	84	290	39
Wetland disturbance (construction)	acres	3.3	t[6/]	2.2	0.2	1.8	3.3	1.3
Riparian disturbance (construction)	acres	7.9	1.5	2.1	2.7	2.5	6.4	1.2
Water/Fish								
Water body crossed	number	319	18	34	92	135	282	103
Temperature- or sediment-impaired stream crossings	number	–	–	–	–	–	–	–
Soils/Minerals								
Highly erodible soils impacted (construction)	acres	21	10	23	–	–	–	–
Mineral area (construction)	acres	60	16	12	30	5	40	34
Land Use/Recreation								
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	no	yes	yes	yes	yes
Residences within 300 feet of the centerline	number	–	–	1	–	–	–	–
Residences within 1,000 feet of the centerline	number	9	–	1	–	–	–	–
Agriculture								
Dryland farming and irrigated agriculture impacted (construction)	acres	1	–	–	–	–	1	–
CRP[5/] land crossed	miles	–	–	–	–	–	–	–

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 all construction clearing (i.e., ROW clearing, off-ROW fly yards, staging areas, wire-pulling areas, roads, regeneration stations, and substations as applicable).
5/ CRP = Conservation Reserve Program
6/ Value is less than 0.1 acre.

Alternative 1E-B was primarily developed as an alternative to the southern portion of the Proposed Route to avoid sage-grouse core areas. Alternative 1E-B would not cross any sage-grouse core areas whereas the Proposed Route would cross 15.4 miles of this habitat. This alternative would be consistent with the State of Wyoming's Sage-Grouse Core Area strategy, whereas the comparison portion of the Proposed Route would not. This route would cross more Visual Resource Management (VRM) Class II lands (2.6 miles vs. 0) and would result in a new transmission line in the foothills of the Laramie Mountains, creating greater permanent disturbance.

Alternative 1E-C was developed to be approximately 1,500 feet from an existing 230-kV transmission line. Therefore, this alternative would be consistent with the State of Wyoming's Sage-Grouse Core Area strategy, whereas the comparison portion of the Proposed Route would not. This alternative would cross fewer miles of VRM Class I and II lands (0.5 mile vs. 4.8 miles for the comparison portion of the Proposed Route). Alternative 1E-C would be in close proximity to an ice cave, a geologic feature located on private land, which the Proposed Route would avoid. This alternative would cross less big game winter range (32.3 miles vs. 49.1) and would cross the buffers on 6 raptor nests compared to 14 for the comparison portion of the Proposed Route. Alternative 1E-C would not meet the Proponents need to provide 230-kV infrastructure farther east where wind energy resources are planned.

2.8.2 Alternative 1W-A Compared to the Proposed Route

Segment 1W of the 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, and wetlands. Table 2.8-2 compares resource characteristics between the Proposed Route and its Route Alternative. Figure A-2 in Appendix A shows the Proposed Route and Route Alternative.

Alternative 1W-A was developed as an alternative to the north end of the Proposed Route that uses existing BLM- and Forest Service-designated ROW corridors. This alternative would be parallel to an existing transmission line corridor for 10.7 miles vs. 6.4 miles for the comparison portion of the Proposed Route. Alternative 1W-A would be shorter than the comparison portion of the Proposed Route (16.2 miles vs. 20.3) and, therefore, would result in less overall disturbance. However, it would result in up to three transmission lines on some private parcels. Alternative 1W-A would cross one raptor nest buffer whereas the Proposed Route would not cross any. Both Alternative 1W-A and the comparison portion of the Proposed Route would be consistent with the state's Sage-Grouse Core Area strategy identified in the Wyoming Governor's EO 2011-5. This alternative would impact 3.6 acres of wetlands whereas the comparison portion of the Proposed Route would not cross any. Alternative 1W-A would potentially affect slightly more cultural resource sites (36 vs. 34) than the comparison portion of the Proposed Route. Alternative 1W-A would cross one fewer historic trail than the comparison portion of the Proposed Route (two vs. three).

Table 2.8-2. Alternative 1W-A Compared to the Proposed Route

Comparison Features	Unit	Proposed Segment 1W(a) Total Length	Proposed Comparison Portion for Alternative 1W-A	Alternative 1W-A
General				
Total Length	miles[1/]	76.5	20.3	16.2
Construction Disturbance Area	acres[2/]	623	210	136
Operations Disturbance Area	acres	182	47	40
Land Ownership and Use				
BLM	miles	26.6	–	–
Forest Service	miles	2.3	–	–
Other Federal	miles	–	–	–
State	miles	18.5	10.3	5.5
Private	miles	29.1	10.0	10.7
Indian Reservation	miles	–	–	–
WWE Corridor[3/]	miles	18.8	–	–
Within or Adjacent to Existing Transmission Corridor	miles	51.4	8.1	5.3
Resource Summaries				
Visual				
VRM I or II crossed	miles	0.7	–	–
Cultural				
Potentially affected cultural resources	number	69	34	36
Historic trails crossed	number	3	3	2
Wildlife				
Designated big game winter range crossed	miles	76.6	35.3	30.7
Big game parturition range crossed	miles	–	–	–
Raptor nests within 1 mile	number	6	0	1
Sage-grouse core area crossed	miles	34.0	8.5	0.7
Vegetation				
Forest and woodland vegetation removed (construction)	acres	75	2	<1

Table 2.8-2. Alternative 1W-A Compared to the Proposed Route (continued)

Comparison Features	Unit	Proposed Segment 1W(a) Total Length	Proposed Comparison Portion for Alternative 1W-A	Alternative 1W-A
Wetland disturbance (construction)	acres	3.1	t[5/]	3.6
Riparian disturbance (construction)	acres	3.8	0.7	1.5
Water/Fish				
Waterbodies crossed	number	165	23	26
Temperature- or sediment-impaired stream crossings	number	–	–	–
Soils/Minerals				
Highly erodible soils impacted (construction)	acres	7	–	22
Mineral area (construction)	acres	86	28	6
Land Use/Recreation				
BLM or FS Plan Amendment would be required	yes/no	Yes	yes	no
Residences within 300 feet of the centerline	number	1	1	–
Residences within 1,000 feet of the centerline	number	8	7	2
Agriculture				
Dryland farming and irrigated agriculture impacted (construction)	acres	–	–	–
CRP[4/] land crossed	miles	–	–	–

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/ CRP = Conservation Reserve Program.
5/ Value is less than 0.1 acre.

2.8.3 Alternatives 2A, 2B, and 2C Compared to the Proposed Route

Segment 2 of the Proposed Route was developed to follow the WWE corridor and existing BLM-designated ROW corridor where feasible. 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 Proposed Route would have the least impact on Fort Fred Steele and residences among the Route Alternatives. Table 2.8-3 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 Proposed Route; however, visual impacts to visitors to Fort Fred Steele State Historic Site would be greater compared to the other alternatives and the comparison portion. Alternative 2A would disturb more sage-grouse core area than the comparison portion of the Proposed Route (16.8 acres vs. 14.9) and would impact more acres of mineral leases (92 acres vs. 83). Alternative 2A would cross less big game winter range than the comparison portion of the Proposed Route (39.4 miles vs. 62.8). Both Alternative 2A and the comparison portion of the Proposed Route would cross the Continental Divide SRMA and 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 not impact sage-grouse core area and would affect slightly less big game winter range than the comparison portion of the Proposed Route (10.4 miles vs. 16.8). Alternative 2B would affect fewer acres of mineral leases (34 acres vs. 54). Alternative 2B would cross the Continental Divide SRMA whereas the corresponding portion of the Proposed Route would cross the Continental Divide SRMA and the North Platte River SRMA. Alternative 2B would be less visible from the Fort Fred Steele State Historic Site than the comparison portion of the Proposed Route.

Alternative 2C was developed to maximize use of the Wyoming Governor's sage-grouse transmission line corridor to be consistent with EO 2011-5. This alternative would cross less sage-grouse core area than the Proposed Route (24.1 acres vs. 27.7). This route would be shorter than the Proposed Route or the other alternatives, and thus would result in less disturbance; however, it would impact more acres of mineral leases (63 acres vs. 57). It would also lie on more public and less private land than the comparison portion of the Proposed Route. Neither Alternative 2C nor the corresponding portion of the Proposed Route would cross an SRMA or be near the Fort Fred Steele State Historic Site.

Table 2.8-3. Alternatives 2A, 2B, and 2C Compared to the Proposed Route

Comparison Features	Unit	Proposed Segment 2 Total Length	Proposed Comparison Portion for Alt. 2A	Alt. 2A	Proposed Comparison Portion for Alt.2B	Alt. 2B	Proposed Comparison Portion for Alt. 2C	Alt. 2C
General								
Total Length	miles[1/]	96.7	28.8	28.4	7.0	6.2	28.4	24.4
Construction Disturbance Area	acres[2/]	1,544	398	446	104	80	369	322
Operations Disturbance Area	acres	401	74	90	16	18	77	52
Land Ownership and Use								
BLM	miles	36.6	10.1	10.2	4.2	2.3	9.6	11.4
Forest Service	miles	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	–
State	miles	6.2	2.4	1.7	–	–	1.0	–
Private	miles	53.4	16.2	16.5	2.7	3.8	17.8	13.0
Indian Reservation	miles	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	16.5	0.7	8.0	0.4	1.2	0.4	1.4
Within or Adjacent to Existing Transmission Corridor	miles	53.9	5.6	28.3	0.4	5.0	4.7	3.5
Resource Summaries								
Visual								
VRM I or II crossed	miles	–	–	–	–	–	–	–
Cultural								
Potentially affected cultural resources	number	466	111	123	31	34	79	82
Historic trails crossed	number	9	5	6	2	3	6	–
Wildlife								
Designated big game winter range crossed	miles	190.1	62.8	39.4	16.8	10.4	55.0	31.6
Big game parturition range crossed	miles	–	–	–	–	–	–	–
Raptor nests within 1 mile	number	120	20	15	7	5	33	47
Sage-grouse core area crossed	miles	44.5	14.9	16.8	–	–	27.7	24.1

Table 2.8-3. Alternatives 2A, 2B, and 2C Compared to the Proposed Route (continued)

Comparison Features	Unit	Proposed Segment 2 Total Length	Proposed Comparison Portion for Alt. 2A	Alt. 2A	Proposed Comparison Portion for Alt.2B	Alt. 2B	Proposed Comparison Portion for Alt. 2C	Alt. 2C
Vegetation								
Forest and woodland vegetation removed (construction)	acres	7	–	–	–	–	–	–
Wetland disturbance (construction)	acres	2.5	2.1	2.3	t[5/]	0.2	0.2	–
Riparian disturbance (construction)	acres	7.2	1.3	8.0	0.1	5.7	1.6	0.1
Water								
Waterbodies crossed	number	276	62	78	9	15	70	17
Temperature- or sediment-impaired stream crossings	number	–	–	–	–	–	–	–
Soils/Minerals								
Highly erodible soils impacted (construction)	acres	53	–	–	–	–	–	–
Mineral area (construction)	acres	396	83	92	54	34	57	63
Land Use/Recreation								
BLM Plan Amendment would be required	yes/no	Yes	yes	no	yes	no	yes	no
Residences within 300 feet of centerline	number	–	–	–	–	1	–	–
Residences within 1,000 feet of centerline	number	1	–	–	–	7	–	–
Agriculture								
Dryland farming and irrigated agriculture impacted (construction)	acres	–	–	–	–	–	–	–
CRP[4/] land crossed	miles	–	–	–	–	–	–	–

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/ CRP = Conservation Reserve Program.
5/ Value is less than 0.1 acre.

2.8.4 Alternatives 4A, 4B, 4C, 4D, 4E, and 4F Compared to Proposed Route

Initial routing for Segment 4 of the Proposed Route focused on an existing east-west 345-kV ROW with three existing lines originating at the Jim Bridger Power Plant and heading west/northwest into southeastern Idaho. Concerns regarding sage-grouse core area, big game winter range, cultural resources, historic trails, visual resources, and siting on private versus public lands resulted in the identification of six alternative routes. Table 2.8-4 compares effects to key resources between each Route Alternative. Figures A-5 and A-6 in Appendix A show the Proposed Route and Route Alternatives.

Alternative 4A was developed to parallel the existing 345-kV corridor where feasible. This alternative would be consistent with EO 2011-5 and was recommended by the Office of the Governor of Wyoming whereas the comparison portion of the Proposed Route would not be consistent. This alternative would be 5 miles shorter and would result in less overall disturbance than the corresponding portion of the Proposed Route. Alternative 4A would cross less VRM Class II lands (13.5 miles vs. 19.1) than the comparison portion of the Proposed Route and less big game winter range (80.1 miles vs. 127.0). Alternative 4A would impact fewer cultural resources than the Proposed Route (300 compared to 451) but would cross historic trails more times (11 compared to 7).

Alternatives 4B through 4F would not be consistent with EO 2011-5. Alternative 4F would cross the least sage-grouse core area (27 miles) and 4C and 4E would cross the most (approximately 57 miles); the comparison portion of the Proposed Route would cross 31.9 miles and Alternative 4A would cross 28.4 miles. 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 4D), the Raymond Mountain Special Management Area (Alternative 4F), and Fossil Butte National Monument (Alternatives 4B and 4C); however, these alternatives would cross less VRM Class II land than the comparison portion of the Proposed Route. Overall, visual impacts would be least under Alternative 4D. Alternatives 4B through 4E would cross between 102.3 to 117.8 miles of designated big game winter range, whereas the comparison portion of the Proposed Route would cross 127.0 miles and Alternatives 4A and 4F 70.1 and 80.1, respectively. Alternatives 4D, 4E, and 4F would have the fewest cultural resource impacts; Alternative 4B would affect the most cultural resources. Alternatives 4B through 4E would cross historic trails approximately the same number of times as the comparison portion of the Proposed Route (6 to 7), while Alternatives A and F would cross more times (11 and 10, respectively).

Table 2.8-4. Alternatives 4A, 4B, 4C, 4D, 4E, and 4F Compared to the Proposed Route

Comparison Features	Unit	Proposed Segment 4 Total Length	Proposed Comparison Portion for Alt. 4A–4F	Alt. 4A	Alt. 4B	Alt. 4C	Alt. 4D	Alt. 4E	Alt. 4F
General									
Total Length	miles[1/]	203.0	90.2	85.2	100.2	101.6	100.8	102.2	87.5
Construction Disturbance Area	acres[2/]	2,846	1,234	1,250	1,484	1,478	1,505	1,495	1,260
Operations Disturbance Area	acres	651	262	277	348	341	355	345	280
Land Ownership and Use									
BLM	miles	82.2	53.0	43.0	50.6	46.9	52.1	48.4	45.2
Forest Service	miles	9.2	–	–	–	–	–	–	–
Other Federal	miles	3.1	3.1	3.1	0.6	1.2	0.6	1.2	3.1
State	miles	10.7	2.7	4.5	8.1	8.6	6.7	7.2	3.6
Private	miles	97.7	31.4	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	96.4	19.7	77.5	35.6	35.6	35.6	35.6	54.1
Resource Summaries									
Visual									
Forest Service Retention and Partial Retention VQOs Crossed	miles	9.2	–	–	–	–	–	–	–
VRM I or II crossed	miles	19.1	19.1	13.5	7.3	12.5	4.3	9.5	16.4
Cultural									
Potentially affected cultural resources	number	656	451	300	470	262	244	242	238
Historic trails crossed	number	16	7	11	6	7	6	7	10
Wildlife									
Designated big game winter range crossed	miles	254.8	127.0	80.1	102.7	117.8	102.3	117.5	70.1
Big game parturition range crossed[4/]	miles	6.4	6.4	8.2	–	–	–	–	8.2
Raptor nests within 1 mile	number	51	9	12	19	19	19	19	11

Table 2.8-4. Alternatives 4A, 4B, 4C, 4D, 4E and 4F Compared to the Proposed Route (continued)

Comparison Features	Unit	Proposed Segment 4 Total Length	Proposed Comparison Portion for Alt. 4A–4F	Alt. 4A	Alt. 4B	Alt. 4C	Alt. 4D	Alt. 4E	Alt. 4F
Wyoming Sage-Grouse Core Area crossed	miles	43.8	31.9	28.4	44.0	56.4	44.6	57.0	27.0
Idaho Key Habitat crossed	miles	14.2	2.6	2.6	4.9	4.9	4.9	4.9	2.6
Vegetation									
Forest and woodland vegetation removed (construction)	acres	941	373	51	5	4	9	7	97
Wetland disturbance (construction)	acres	45.2	10.1	28.0	21.6	14.9	18.9	15.3	16.7
Riparian disturbance (construction)	acres	20.1	6.5	27.5	21.5	21.4	21.0	20.8	26.3
Water/Fish									
Waterbodies crossed	number	414	224	242	375	354	413	387	220
Temperature- or Sediment-impaired stream crossings	number	3	1	1	1	1	1	1	1
Soils/Minerals									
Highly erodible soils impacted (construction)	acres	896	92	266	306	405	319	406	248
Mineral area (construction)	acres	502	303	254	516	438	564	492	234
Land Use/Recreation									
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	yes	yes	yes	yes	yes	yes
Residences within 300 feet of the centerline	number	4	1	–	–	–	–	–	–
Residences within 1,000 feet of the centerline	number	11	3	2	1	2	1	2	3
Agriculture									
Dryland farming and Irrigated Agriculture Impacted (construction)	acres	158	5	7	37	3	34	3	19
CRP[5/] land crossed	miles	6.1	–	–	–	–	–	–	–

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, a utility corridor generally 3,000 feet wide.
4/ Data are for the Wyoming portion of Segment 4; Idaho does not map big game parturition range.
5/ CRP = Conservation Reserve Program.

2.8.5 Alternatives 5A, 5B, 5C, 5D, and 5E Compared to Proposed Route

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 2.8-5 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. They would also avoid all raptor nest buffers, as would the comparison portion of the Proposed Route. Alternative 5A would come within 1,000 feet of three residences, compared to four for Alternative 5B and the comparison portion of the Proposed Route.

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 visual 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. Neither Alternative 5C nor the comparison portion of the Proposed Route would be within 1,000 feet of a residence or school.

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 agricultural land than would be impacted by the comparison portion of the Proposed Route. 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 an elementary school (the only alternative to do so) and 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 the Project purpose and need. 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 2.8-5. Alternatives 5A, 5B, 5C, 5D, and 5E Compared to the Proposed Route

Comparison Features	Unit	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/]	54.6	25.3	33.7	44.4	33.2	26.1	19.4	17.5	5.8	5.3
Construction Disturbance Area	acres[2/]	982	439	554	683	590	433	411	366	138	104
Operations Disturbance Area	acres	175	73	87	99	94	56	63	53	24	24
Land Ownership and Use											
BLM	miles	13.2	8.7	10.1	10.3	8.8	–	2.7	–	1.2	0.1
Forest Service	miles	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	12.4	–	–	–	–
State	miles	3.6	3.0	0.3	0.3	3.5	0.7	0.6	0.8	0.1	–
Private	miles	37.8	13.5	23.3	33.8	20.9	13.0	16.1	16.4	4.5	5.0
Indian Reservation	miles	–	–	–	–	–	12.4	–	–	–	–
WWE Corridor[3/]	miles	–	–	–	–	–	–	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	16.8	1.9	1.8	1.8	0.7	26.1	5.8	1.3	5.4	5.3
Resource											
Visual											
VRM I or II crossed	Miles	1.6	1.5	–	–	1.5	–	0.1	–	0.1	–
Cultural											
Potentially affected cultural resources	number	29	2	9	4	1	–	23	23	22	17
Historic trails crossed	number	3	1	1	1	–	–	2	2	2	2
Wildlife											
Designated big game winter range crossed	miles	32.9	9.6	14.3	22.2	21.6	16.4	16.9	14.4	3.5	3.6
Big game parturition range crossed	miles	No data; Idaho Department of Fish and Game does not map big game parturition areas.									
Raptor nests within 1 mile	number	3	–	–	–	–	–	2	2	2	–
Idaho Sage-Grouse Key Habitat crossed	miles	–	–	2.9	9.1	–	–	–	–	–	–

Table 2.8-5. Alternatives 5A, 5B, 5C, 5D, and 5E Compared to the Proposed Route (continued)

Comparison Features	Unit	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	500	362	316	244	396	156	143	155	6	–
Wetland disturbance (construction)	acres	3.8	2.8	0.2	0.1	1.3	3.5	1.1	2.6	–	–
Riparian disturbance (construction)	acres	5.9	1.8	0.8	1.4	2.3	2.7	3.4	7.5	1.1	0.1
Water/Fish											
Waterbodies crossed	number	177	88	84	103	147	52	75	51	5	6
Temperature- or sediment-impaired stream crossings	number	40	34	20	21	40	8	6	6	–	–
Soils/Minerals											
Highly erodible soils impacted (construction)	acres	853	390	464	651	540	432	337	297	63	38
Mineral area (construction)	acres	–	–	–	–	–	–	–	–	–	–
Land Use/Recreation											
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	yes	yes	yes	no	yes	no	yes	no
Residences within 300 feet of centerline	number	2	3	4	4	–	–	–	2	–	–
Residences within 1,000 feet of centerline	number	22	4	3	4	–	–	10	24	10	2
Agriculture											
Dryland farming and irrigated agriculture impacted (construction)	acres	210	85	102	212	102	68	91	115	43	27
CRP[4/] land crossed	miles	18.4	6.5	9.5	11.3	5.5	2.5	5.6	6.5	0.3	1.0

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/ CRP = Conservation Reserve Program.

2.8.6 Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, and 7J Compared to Proposed Route

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 2.8-6 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 2.8.5. Both alternatives would cross less big game winter range than the comparison portion of the Proposed Route (6.9 and 10.3 acres, respectively, vs. 16.9) but more sage-grouse key habitat (4.6 and 7.9 miles, respectively, vs. 0 miles). Alternative 7B would impact more agricultural land (244 acres vs. 150) than the comparison portion, Alternative 7A approximately the same; both alternatives would cross within 1,000 feet of three residences, compared to two for the comparison portion of the Proposed Route.

Alternative 7C was developed to avoid impacts to sage-grouse, whereas the comparison portion of the Proposed Route would cross 0.2 mile of key habitat. Alternative 7C would cross more big game winter range (7.3 miles vs. 4.8). It would affect less agricultural land than the comparison portion of the Proposed Route (71 acres vs. 119). 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 cross the Oregon and California NHTs. Alternative 7D would cross 2.5 miles of sage-grouse key habitat compared to 1.7 miles for the comparison portion of the Proposed Route and would cross the same amount of big game winter range (2 miles). 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 (37 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 cross slightly more sage-grouse key habitat than the comparison portion of the Proposed Route (3.2 miles vs. 3.0). Alternative 7E would cross within 1,000 feet of four residences, compared to seven for the comparison portion of the Proposed Route, and would impact a similar amount of agricultural land (12 and 14 acres, respectively).

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 cross more big game winter range (10.7 miles vs. 9.3) but less sage-grouse key habitat (3.3 miles vs. 5.1) than the comparison portion of the Proposed Route, although it would not avoid the Water Canyon area. This alternative would impact less agricultural land (29 acres vs. 66) 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 seven. Both Alternative 7F and the Proposed Route would affect a planned runway at the Dry Creek Sky Ranch.

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 run along the northern border of the vehicle closure area, whereas the comparison portion of the Proposed Route would run farther within. Despite this difference, Alternative 7G would disturb a comparable amount of big game winter range (3.2 miles vs. 3.1) and sage-grouse key habitat (also 3.2 miles vs. 3.1) as the comparison portion of the Proposed Route. Alternative 7G would also disturb more agricultural land than the comparison portion of the Proposed Route (17 acres vs. 7). Both Alternative 7G and the comparison portion of the Proposed Route would cross within 1,000 feet of one residence.

Through a lengthy process of collaboration with the landowners; local, state, and federal agencies, and the Proponents, Alternative 7I was developed to avoid proximity to agricultural facilities (e.g., dairies and agricultural land). It should be noted that Alternative 7I was presented and supported by local landowners over the Proposed Route but was not supported by the Proponents. As a compromise to the Proposed Route and Alternative 7I, the Proponents developed and support Alternative 7H (which was originally considered but eliminated during their siting study). Cassia County has stated its objection to Alternative 7H. After additional consideration, local landowners proposed Alternative 7J, which requires that the Cedar Hill Substation be relocated 24 miles southwest of the proposed location (Rogerson Substation).

Alternatives 7H, 7I, and 7J would be longer than the comparison portions of the Proposed Route (9.4, 55.3, and 58.2 miles, respectively). Alternatives 7H, 7I, and 7J would impact less agricultural land (between approximately 490 and 580 acres less) than the comparison portions of the Proposed Route. The three alternative routes would impact less big game winter range, 37.3, 45.4, and 47.9 miles, respectively, than the comparison portions of the Proposed Route (50.1 miles for the 7H and 7I comparison portion and 60.0 miles for the 7J portion). Alternatives 7H, 7I, and 7J, being longer, would result in greater amounts of ground disturbance during construction, operations, and maintenance than the comparison portions of the Proposed Route; they would also have a greater visual impact to sensitive federal lands. Alternatives 7I and 7J would have the potential to impact visitors to the City of Rocks National Reserve as well as local sensitive viewing areas such as Sparks Basin, Granite Pass, the Sawtooth National Forest, and the California NHT. Alternatives 7I and 7J would pass along the southern edge of the proposed Tunnel Hill Archaeological District. In addition, Alternatives 7I and 7J would cross into Nevada for 7.2 miles, the

only alternatives that would cross that state. Finally, these alternatives would cross more sage-grouse key habitat (41.1, 67.8, and 73.0 miles, respectively, vs. 11.9 and 16.8) and cross more nesting raptor buffers (54, 66, and 85, respectively, vs. 12 and 32) than the comparison portions of the Proposed Route.

Table 2.8-6. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, and 7J Compared to the Proposed Route

Comparison Features	Unit	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/]	118.1	35.2	38.0	46.4	20.1	20.3	6.2	6.8
Construction Disturbance Area	acres[2/]	1,804	499	618	746	288	289	112	125
Operations Disturbance Area	acres	231	47	96	99	36	28	11	13
Land Ownership and Use									
BLM	miles	28.1	7.0	7.2	7.7	9.1	7.2	1.7	0.1
Forest Service	miles	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	–	–
State	miles	4.3	3.8	–	–	–	1.0	0.5	1.0
Private	miles	85.7	24.4	30.7	38.7	11.0	12.0	4.0	5.7
Indian Reservation	miles	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	0.5	–	–	–	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	16.5	4.3	–	–	–	–	–	–
Resource Summaries									
Visual									
Forest Service Retention and Partial Retention VQOs crossed	miles	–	–	–	–	–	–	–	–
Forest Service Modification VQO Crossed	miles	–	–	–	–	–	–	–	–
VRM I or II crossed	miles	1.3	1.3	–	–	–	–	–	–
Cultural									
Potentially affected cultural resources	number	33	5	9	6	4	3	6	2
Historic trails crossed	number	6	1	1	1	3	3	1	1
Wildlife									
Designated big game winter range crossed	miles	50.1	16.9	6.9	10.3	4.8	7.3	2.0	2.0
Big game parturition range crossed	miles	No data; Idaho Department of Fish and Wildlife does not map big game parturition areas.							
Raptor nests within 1 mile	number	12	–	–	–	4	2	1	1
Idaho Sage Grouse Key Habitat crossed	miles	11.9	–	4.6	7.9	0.2	–	1.7	2.5

Table 2.8-6. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, and 7J Compared to the Proposed Route (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 Alts. 7H and 7I	Alt. 7H	Alt. 7I	Proposed Comparison Portion for Alt. 7J	Alt. 7J[5/]
General												
Total Length	miles[1/]	3.8	4.5	10.5	10.8	3.1	3.2	118.1	127.5	173.4	143.9	202.1
Construction Disturbance Area	acres[2/]	67	78	201	169	48	72	1,804	2,118	2,735	2,231	3,180
Operations Disturbance Area	acres	6	8	27	24	6	6	231	340	451	294	512
Land Ownership and Use												
BLM	miles	0.3	1.9	1.3	4.4	2.4	1.8	28.1	46.6	72.5	28.1	58.9
Forest Service	miles	–	–	–	–	–	–	–	11.4	27.7	–	13.0
Other Federal	miles	–	–	–	–	–	–	–	–	–	–	–
State	miles	–	–	–	–	–	–	4.3	5.0	7.9	4.3	8.9
Private	miles	3.5	2.6	9.2	6.4	0.8	1.4	85.7	64.5	65.3	91.6	92.4
Indian Reservation	miles	–	–	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	–	–	–	–	0.1	–	0.5	0.5	8.3	5.8	19.7
Within or Adjacent to Existing Transmission Corridor	miles	–	–	–	–	0.2	0.2	16.5	12.2	30.0	24.9	41.6
Resource Summaries												
Visual												
Forest Service Retention and Partial Retention VQOs crossed	miles	–	–	–	–	–	–	–	2.9	0.8	–	0.8
Forest Service Modification VQO Crossed	miles	–	–	–	–	–	–	–	5.5	9.2	–	6.2
VRM I or II crossed	miles	<0.1	0.3	<0.1	–	–	–	1.4	0.9	0.6	1.4	0.6
Cultural												
Potentially affected cultural resources	number	2	2	2	3	3	3	31	60	119	48	123
Historic trails crossed	number	–	–	–	–	–	–	6	6	9	3	9
Wildlife												
Designated big game winter range crossed	miles	3.0	4.5	9.3	10.7	3.1	3.2	50.1	37.3	45.4	60.0	47.9
Big game parturition range crossed	miles	No data; Idaho Department of Fish and Game does not map big game parturition areas.										
Raptor nests within 1 mile	number	7	7	7	7	–	–	12	54	66	32	85
Idaho Sage-Grouse Key Habitat crossed	miles	3.0	3.2	5.1	3.3	3.1	3.2	11.9	41.1	67.8	16.8	73.0

Table 2.8-6. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, and 7J Compared to the Proposed Route (continued)

Comparison Features	Unit	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 7/9 for Alt. 7D	Alt. 7D
Vegetation									
Forest/woodland vegetation removed (construction)	acres	418	238	266	132	–	–	8	8
Wetland disturbance (construction)	acres	3.4	1.3	2.2	0	t[6/]	–	1.1	1.1
Riparian disturbance (construction)	acres	4.6	2.2	2.5	1.2	t[6/]	–	1.9	1.8
Water/Fish									
Streams crossed	number	209	43	110	101	17	24	17	18
Temperature- or sediment-impaired streams crossed	number	15	15	29	25	1	–	–	–
Soils/ Minerals									
Highly erodible soils impacted (construction)	acres	1,740	463	529	723	288	289	112	125
Mineral area (construction)	acres	–	–	–	–	–	–	–	–
Land Use/ Recreation									
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	yes	yes	yes	no	yes	no
Residences within 300 feet of centerline	number	6	1	–	1	–	–	–	–
Residences within 1,000 feet of centerline	number	21	2	3	3	–	2	–	–
Agriculture									
Dryland farming and irrigated agriculture impacted (construction)	acres	750	150	143	244	119	71	37	37
CRP[4/] land crossed	miles	25.6	12.5	14.6	16.8	1.0	4.0	0.4	0.2

Table 2.8-6. Alternatives 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, and 7J Compared to the Proposed Route (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 Alts. 7H and 7I	Alt. 7H	Alt. 7I	Proposed Comparison Portion 7/9 for Alt. 7J[5/]	Alt. 7J[5/]
Vegetation												
Forest/woodland vegetation removed (construction)	acres	14	25	98	106	–	–	418	704	896	418	798
Wetland disturbance (construction)	acres	–	–	0.4	t[6/]	t[6/]	t[6/]	3.4	5.4	12.3	3.6	9.5
Riparian disturbance (construction)	acres	–	–	t[6/]	t[6/]	t[6/]	0.8	4.6	4.5	13.2	4.6	11.0
Water/Fish												
Waterbodies crossed	No.	6	7	38	19	4	–	209	448	525	257	536
Temperature- or Sediment-impaired stream crossings	No.	–	–	–	–	–	–	15	10	21	18	20
Soils/ Minerals												
Highly erodible soils impacted (construction)	acres	67	78	201	169	48	72	1,740	1,981	2,351	1,899	2,372
Mineral area (construction)	acres	–	–	–	–	–	–	–	11	406	3	406
Land Use/ Recreation												
BLM or Forest Service Plan Amendment would be required	yes/ no	yes	yes	yes	no	yes	no	yes	yes	yes	yes	yes
Residences within 300 feet of centerline	No.	1	1	1	–	1	–	6	1	2	7	2
Residences within 1,000 feet of centerline	No.	7	4	7	–	1	1	21	6	5	23	5
Agriculture												
Dryland farming and irrigated agriculture impacted (construction)	acres	14	12	66	29	7	17	750	258	258	837	258
CRP[4/] land crossed	miles	–	–	0.8	0.2	–	–	13.8	13.6	13.7	TBD[7/]	TBD[7/]

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/ CRP = Conservation Reserve Program.
5/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.
6/ Value is less than 0.1 acre.
7/ Information on the miles of Alternative 7J that would cross CRP land has been requested from the Farm Service Agency and will be added to Table 3.18-18 upon receipt.

2.8.7 Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Proposed Route

Key factors considered in routing this segment included using the WWE corridor where possible, conflicts with agricultural lands, residential development, visual resources, the SRBOP, Guffey Butte-Black Butte Archaeological District, and the IDANG Orchard Training Area. Table 2.8-7 compares effects to key resources from the Proposed Route and each Route Alternative. Figure A-10 in Appendix A shows the Proposed Route and Route Alternatives.

Alternative 8A was developed to maximize use of the WWE corridor. This alternative would cross 6.2 miles of VRM Class I (but no Class II) land whereas the comparison portion of the Proposed Route would cross 3.2 miles of class I and 8.1 miles of Class II. The comparison portion of the Proposed Route would be close to the communities of Hagerman and Glenns Ferry, the Hagerman Fossil Beds, and the Billingsley Creek Wildlife MA. This alternative would impact more cultural resources than its comparison portion of the Proposed Route (84 vs. 33). It would cross within 1,000 feet of 46 residences compared to 14 for the comparison portion of the Proposed Route. It would affect slightly less agricultural land (182 vs. 188 acres).

Alternative 8B, originally considered for the Proposed Route to avoid the SRBOP and the IDANG Orchard Training Area, became an alternative due to opposition from the cities of Kuna and Melba, Idaho. Alternative 8B is in close proximity to several residential areas, crossing within 1,000 feet of 55 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 avoid crossing the SRBOP. Alternative 8B would affect more agricultural land (213 acres vs. 29) than the comparison portion of the Proposed Route. Unlike the Proposed Route, it would not cross the archaeological district.

Alternative 8C was also originally considered as part of the Proposed Route. However, it would have an adverse visual impact on residential areas. Although it would only cross within 1,000 feet of one residence, this route would be close to planned expansion of the planned Mayfield Springs community. The comparison portion of the Proposed Route would not be within 1,000 feet of a residence and would not affect the planned subdivision. Alternative 8C would cross more agricultural land (12 acres vs. 0) than the comparison portion of the Proposed Route.

Alternative 8D was developed to avoid the Alpha Maneuver Sector of the IDANG Orchard Training Area (but not the Bravo Sector). The IDANG recently 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.

Alternative 8E was developed to avoid the Halverson Bar non-motorized area in the Guffey Butte-Black Butte Archaeological District. This route would still cross the SRBOP. Neither this alternative nor the comparison portion of the Proposed Route would cross within 1,000 feet of a residence. However, it would follow a portion of Alternative 9D. If that route were selected, Alternative 8E could not be used. Conversely, if Alternative 8E were selected, the Alternative 9D route could not be used.

An amendment would be needed to allow the Proposed Route to be constructed within this non-motorized area; however, the Boise District BLM office has stated that the RMP could not be amended in this way to meet objectives. Alternative 8E would avoid this area.

Table 2.8-7. Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Proposed Route

Comparison Features	Unit	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/]	131.0	51.4	53.6	45.3	45.8	6.5	6.4	6.9	8.1	7.0	18.5
Construction Disturbance Area	acres[2/]	2,125	815	824	754	779	139	138	123	143	98	286
Operations Disturbance Area	acres	246	99	102	87	69	15	16	19	15	10	27
Land Ownership and Use												
BLM	miles	86.5	29.1	25.1	41.9	14.2	5.5	2.3	6.9	2.9	6.4	18.0
Forest Service	miles	–	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	3.7	–	–	2.7	1.5	–	–	–	–	0.1	0.1
State	miles	9.3	2.3	6.3	–	2.8	–	0.3	–	1.0	–	–
Private	miles	33.4	20.0	21.9	2.5	27.1	0.8	3.9	–	4.2	0.4	0.3
Indian Reservation	miles	–	–	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	18.8	–	18.9	5.3	1.0	0.8	1.9	–	–	–	–
Within or Adjacent to Existing Transmission Corridor	miles	114.5	51.1	38.3	32.0	17.1	2.1	5.5	6.9	6.9	3.4	11.3
Resource Summaries												
Visual												
VRM I or II crossed	miles	15.5	11.35	6.8	4.15	–	–	–	–	–	1.4	2.4
Cultural												
Potentially affected cultural resources	number	116	43	102	64	34	2	2	8	7	36	20
Wildlife												
Designated big game winter range crossed	miles	67.6	39.5	20.4	4.1	4.1	4.1	5.6	–	–	0	1.5
Big game parturition range crossed	miles		No data; Idaho Department of Fish and Game does not map big game parturition areas.									
Raptor nests within 1 mile	number	301	1	–	283	52	12	17	50	57	184	510
Idaho Sage-grouse Key Habitat crossed	miles	13.2	6.0	–	–	–	–	–	–	–	–	–

Table 2.8-7. Alternatives 8A, 8B, 8C, 8D, and 8E Compared to the Proposed Route (continued)

Comparison Features	Unit	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 disturbance (construction)	acres	3.3	1.6	0.4	–	5.8	–	–	–	–	–	–
Riparian disturbance (construction)	acres	1.4	0.5	6.0	0.7	1.6	0.1	t[5/]	–	–	–	–
Water/Fish												
Waterbodies crossed	number	259	57	55	112	18	18	21	8	8	6	12
Temperature- or Sediment-impaired stream crossings	number	30	1	2	28	5	5	2	7	5	–	–
Soils/Minerals												
Highly erodible soils impacted (construction)	acres	1,540	288	280	696	727	138	138	123	142	59	267
Mineral area (construction)	acres	–	–	–	–	2	–	–	–	–	–	–
Land Use/Recreation												
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes
Residences within 300 feet of centerline	number	6	3	7	2	24	–	–	–	1	–	–
Residences within 1,000 feet of centerline	number	27	14	46	12	55	–	1	–	1	–	–
Agriculture												
Dryland Farming and Irrigated Agriculture Impacted (construction)	acres	219	188	182	29	213	–	12	0	12	9	0
CRP[4/] land crossed	miles	–	–	–	–	–	–	–	–	–	–	–

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/ CRP = Conservation Reserve Program.
5/ Value is less than 0.1 acre.

2.8.8 Alternatives 9A, 9B, 9C, 9D, 9E, 9F, 9G and 9H Compared to the Proposed Route

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 2.8-8 compares effects to key resources under each route alternative. Figure A-11 in Appendix A shows the 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 and the comparison portion of the Proposed Route would both cross within 1,000 feet of one residence, and Alternative 9A would impact an additional 3 acres of agriculture land compared to 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 disturb more agricultural land than the comparison portion of the Proposed Route (206 acres vs. 45). 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 portion only. 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 (10.4 miles vs. 1.0) 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 impact more agricultural lands than the comparison portion of the Proposed Route (62 acres vs. 0). Alternative 9C would not cross the eligible WSR portion of Salmon Falls Creek whereas the comparison portion of the Proposed Route would. The Idaho State Office of the BLM has indicated that an amendment cannot be written to allow the crossing of the Salmon Falls Creek WSR eligible portion at the Proposed Route location.

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 and 1.3 miles, respectively, vs. 18.4 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 (19 and 3 acres, respectively, vs. 199 acres). Alternative 9D would cross more BLM-managed VRM Class II lands (11.5 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.

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 the Guffey Butte-Black Butte Archaeological District. It 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. It would cross the river approximately 3 miles south of the Alternative 9F crossing point. Alternative 9F would be within 1,000 feet of eight residences, compared to nine 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 would be similar to those for Alternative 9D.

Alternative 9H is another route developed by the BLM that would avoid the Cove Non-motorized Area and the non-motorized portion of the Guffey Butte-Black Butte Archaeological 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 eight 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.

Table 2.8-8. Alternatives 9A, 9B, 9C, 9D, 9E, 9F, 9G, and 9H Compared to the Proposed Route

Comparison Features	Unit	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–H	Alt. 9D	Alt. 9E	Alt. 9F	Alt. 9G	Alt. 9H
General														
Total Length	miles[1/]	161.7	7.8	7.7	49.5	53.2	14.7	15.3	57.2	58.4	68.7	62.9	56.4	61.0
Construction Disturbance Area	acres[2/]	2,670	117	133	825	816	239	279	955	815	1,004	971	848	979
Operations Disturbance Area	acres	359	15	18	121	85	26	31	106	80	135	93	83	96
Land Ownership and Use														
BLM	miles	128.7	6.0	5.6	46.0	33.1	13.6	8.3	37.6	51.1	65.1	46.5	49.4	44.8
Forest Service	miles	–	–	–	–	–	–	–	–	–	–	–	–	–
Other Federal	miles	–	–	–	–	–	–	–	–	–	–	0.2	0.2	0.2
State	miles	4.6	–	–	1.1	1.0	1.1	–	1.1	3.9	2.3	3.9	3.9	3.9
Private	miles	28.4	1.8	2.1	2.4	19.1	–	7.0	18.4	3.3	1.3	12.3	2.9	12.0
Indian Reservation	miles	–	–	–	–	–	–	–	–	–	–	–	–	–
WWE Corridor[3/]	miles	53.9	–	–	3.8	28.2	–	–	32.8	0.4	0.4	8.4	0.4	8.4
Within or Adjacent to Existing Transmission Corridor	miles	16.9	0.4	2.2	1.0	23.3	1.0	10.4	0	31.3	–	28.6	26.3	23.6
Resource														
Visual														
VRM I or II crossed	miles	5.7	–	–	3.85	1.6	3.85	0.1	0.2	11.5	0	5.25	17.9	11.7
Cultural														
Potentially affected cultural resources	number	116	5	2	66	40	43	37	28	96	32	46	103	28
Historic trails crossed	number	1	–	–	1	2	1	1	–	5	–	3	4	5
Wildlife														
Designated big game winter range crossed	miles	29.9	1.9	2.1	–	–	–	–	13.4	1.9	38.5	1.9	2.1	2.1
Big game parturition range crossed	miles	No data; Idaho Department of Fish and Wildlife does not map big game parturition areas.												

Table 2.8-8. Alternatives 9A, 9B, 9C, 9D, 9E, 9F, 9G, and 9H Compared to the Proposed Route (continued)

Comparison Features	Unit	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–H	Alt. 9D	Alt. 9E	Alt. 9F	Alt. 9G	Alt. 9H
Raptor nests within 1 mile	number	78	2	2	32	12	17	5	12	582	13	539	606	563
Idaho Sage-Grouse Key Habitat crossed	miles	11.5	0.2	2.2	6.6	–	5.3	–	–	–	18.2	–	–	–
Vegetation														
Forest/woodland vegetation removed (construction)	acres	1	–	–	1	–	1	–	–	1	–	–	1	–
Wetland disturbance (construction)	acres	0.8	0.3	–	–	–	–	–	0.6	0.7	0.8	1.3	1.1	1.8
Riparian disturbance (construction)	acres	2.4	t[5/]	0.3	0.3	0.5	0.2	–	2.1	1.8	1.4	4.7	2.4	4.5
Water/Fish														
Waterbodies crossed	number	322	16	13	69	58	27	21	136	45	139	57	35	47
Temperature- or sediment-impaired stream crossings	number	20	–	1	12	6	–	2	3	5	22	6	6	7
Soils/Minerals														
Highly erodible soils impacted (construction)	acres	1,224	63	58	672	557	196	146	227	568	630	568	559	559
Mineral area (construction)	acres	10	–	–	2	3	2	2	–	4	135	4	4	4
Land Use/Recreation														
BLM or Forest Service Plan Amendment would be required	yes/no	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
Residences within 300 feet of the centerline	number	8	–	–	–	1	–	1	6	–	–	2	–	2
Residences within 1,000 feet of centerline	number	20	1	1	–	7	–	5	9	–	–	8	–	8
Agriculture														
Dryland farming and irrigated agriculture impacted (construction)	acres	356	–	3	45	206	–	62	199	19	3	109	26	111
CRP[4/] land crossed	miles	–	–	–	–	–	–	–	–	–	–	–	–	–

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/ CRP = Conservation Reserve Program.
5/ Value is less than 0.1 acre.

2.9 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. 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.

There is no impact-free route choice for a large transmission line. In some segments of the Gateway West 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 than have not had a chance to express their opinions on the issues and alternatives so far proposed. It is reasonable to expect those entities to propose additional alternatives or perhaps to present new information on alternatives currently considered.

2.9.1 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 has typically identified preferred alternatives in most of the Draft EISs it has prepared. The BLM portion of the Project approval covers only the federal lands it administers, between 40 and 50 percent of the total length. It does not extend to state-managed or private lands. The BLM recognizes that any route it proposes to approve influences that route's location on adjacent private lands. Faced with this multiple use management situation, it is prudent for the BLM to reserve its identification of a preferred alternative until it has received input on the routes from all sectors of the public. Therefore, the BLM will defer identification of its preferred alternative until the Final EIS for the above reasons. Following the public comment period on the Draft EIS, the BLM pledges to work collaboratively with cooperating agencies and the public to reach a consensus on the preferred route for the Gateway West Project. In the absence of a consensus, the BLM will identify in the Final EIS its preferred alternative based on its multiple-use mandate in the FLPMA. In consideration of the potential changes to the environmental analysis between the draft and final document, the BLM will hold a sufficient public comment period on the Final EIS.

2.9.2 State of Wyoming Preferred Alternatives

As a cooperating agency, the State of Wyoming has reviewed all of the alternatives incorporated into this Draft 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.

2.9.2.1 Segment 1

The State of Wyoming's preferred alternatives for Segment 1W and 1E 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 alternatives are a combination of Alternative 1W-A and Proposed Route 1W(a) for Segment 1W and Alternative 1E-C for Segment 1E (see Appendix A, Figure A-2). The state's preferred alternative for this segment is consistent with EO 2011-5 because both new transmission segments (1E and 1W[a]) could be constructed within 0.5 mile of an existing transmission line through sage-grouse core area.

The Proposed Route for Segment 1E would be inconsistent with EO 2011-5 through the Natrona Core Area and would result in higher levels of impacts to nearly all resources when compared to following Alternative 1E-C adjacent to a portion of the existing Dave Johnston – Rock Springs transmission line. While Alternative 1E-B avoids construction of new transmission within core areas outside existing corridors, it would also result in higher levels of impacts to nearly all resources when compared to constructing Segment 1E adjacent to the existing Dave Johnston – Rock Springs transmission line.

2.9.2.2 Segment 2

The EO 2011-5 Proposed Route for Segment 2 is also the State's preferred alternative except in the vicinity of Hanna, Wyoming (Appendix A, Figure A-3 between points 2a.1, 2d, 2e.4) where the State prefers Alternative 2C (points 2a.1, 2d.1, 2e.4).

EO 2011-5 designates a 2-mile-wide corridor through the Hanna Core Area that is generally located north and west of Hanna. The Proposed Route is aligned through the core area east and south of Hanna. Realigning the Proposed Route to follow Alternative 2C would make it consistent with the corridor established in the EO. The Proposed Route through the Greater South Pass Sage-Grouse Core Area is within the corridor established by the EO. With the minor variation near Hanna, Segment 2 would be consistent with the EO.

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.

2.9.2.3 Segment 3

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

2.9.2.4 Segment 4

Numerous conflicts exist with transmission routing along this segment and a number of alternatives have been developed to address these concerns. However, to date it has not been possible to identify a single alternative that minimizes to acceptable levels impacts to all the resources that occur along this segment.

The State's preferred alternative for Segment 4 is Alternative 4A (see Appendix A, Figure A-5). 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 compensate for impacts to the trails.

The Proposed Route departs from the existing transmission line corridor west of Seedskadee NWR and proceeds north to Fontenelle Reservoir and then west along the southern end of the Bridger NF. Most of the area traversed by the Proposed Route is undeveloped (compared to the area crossed by the existing transmission lines) and impacts to most natural resources are expected to be significantly higher compared to construction adjacent to the existing transmission. The Proposed Route is also inconsistent with EO 2011-5 because it would cross through the Fontenelle Core Area 15 miles north of the existing transmission line corridor. A transmission corridor has not been designated for this core area.

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.

2.9.3 Power County

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.

2.9.3.1 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 (5i, 5m, 6) follows an existing transmission corridor across the Snake River to a termination at the Borah Substation.

2.9.3.2 Segment 7

Power County's preferred alternative is that portion of Alternative 7I that would originate at point 5 and extend through points 7a.0, 7b.0, 7b.1, 7a.2, and 7r.1 (see Appendix A, Figure A-9). In addition, Power County supports Alternative 7J (see discussion below for Twin Falls County).

2.9.4 Cassia County

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).

2.9.4.1 Segment 7

Cassia County's preferred alternative is that portion of Alternative 7I 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 7r.1 to a crossing into Nevada before returning to Cassia County and then passing into Twin Falls County at MP 130. In addition, Cassia County supports Alternative 7J (see discussion below for Twin Falls County).

2.9.5 Twin Falls County

Twin Falls County has identified Alternative 7J (originally called the Rogerson-Hollister Alternative) as their preferred route (Twin Falls County 2010b). This Alternative would connect alternative 7I with the Propose Route along Segment 9, as well as relocating the proposed Cedar Hill Substation in order to provide a point of interconnection between Alternative 7I and Segment 9.

2.9.5.1 Segments 7 and 9

Alternative 7J would deviate from Alternative 7I at point 7r.3 and continue through point 13 where the relocated Cedar Hill Substation would be located and reconnect with the Segment 9 Proposed Route at point 9a.6 (see Appendix A, Figure A-9).

2.9.6 Owyhee County

Owyhee County, a cooperating agency, 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.

2.9.6.1 Segment 9

Owyhee County's preferred northern alternative corresponds to Alternative 9D (see Appendix A, Figure A-11). It would originate at point 9n northeast 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. Alternative 9E, the southern and less preferred route, also originates at point 9n but proceeds south and west through point 9s before rejoining the Proposed Route at point 9p.

2.9.7 Idaho Army National Guard

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 Orchard Training Area, which is on BLM-managed land within the SRBOP, is an important training area used by IDANG.

2.9.7.1 Segment 8

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

Alternative 8D was designed to avoid the Alpha Sector of the training area but would not protect the Bravo Sector. In May 2011, IDANG recommended a new alternative route that would avoid adversely affecting the training area. Their preferred route would remain on the north side of the existing 500-kV transmission line from a point east of the Orchard Training Area to a point west of the area.

2.10 CUMULATIVE EFFECTS SUMMARY

2.10.1 Proposed Project

The effects of the proposed Gateway West 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. 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, are not cumulatively substantial. In other cases, although the effects of Gateway West are 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 are by themselves large, and when considered with other effects, are also cumulatively substantial.

Resources for which Gateway West effects are minor and even when considered together with other projects 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, has 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 (Columbian sharp-tailed grouse, mountain plover, white- and black-tailed prairie dogs, pygmy rabbits, greater sage-grouse, Wyoming pocket gopher, and burrowing owl) and riparian-obligate species (Columbia spotted frog, northern leopard frog, and Preble's meadow jumping mouse). However, even without Gateway West's effects, the loss of habitat and fragmentation from past and present events alone is 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 in recognition of the current critical condition of some types of habitat and the contribution that Gateway West may make to that loss. BLM has required additional mitigation and is considering further mitigation for habitat losses from the Project as detailed in Chapter 3.

The Gateway West Project would not have a measurable adverse effect on migratory bird populations or significant bird conservation sites. It would, however, have a small 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 canid predators. When taken together with the existing substantial habitat loss caused by past, present, and reasonably foreseeable actions, the cumulative impact on migratory bird habitat and ecological conditions is substantial.

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 are 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 over in either watershed. 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.

2.10.2 No Action

Under the No Action Alternative, the BLM would not issue a ROW grant to the Proponents of the Gateway West Transmission Line Project 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 the Gateway West Project, or is not permitted, the demand for transmission services to which its purpose and need refers would not be met with 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.

2.11 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 2.11-1 details the irreversible and irretrievable commitments by resource and indicates in which section of Chapter 3 the resource is discussed.

Table 2.11-1. 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. All visual impacts would end with the end of the Project and would not be irreversible.
3.3	Cultural Resources	Yes	Yes	Removal or disturbance of previously unidentified cultural resources 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 Project would occur.
3.6	Vegetation	Yes	Yes	Removal or disturbance of vegetation 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 Project, irretrievably resulting in loss of native vegetation.
3.9	Wetlands	Yes	Yes	Removal or disturbance of habitat could create irreversible and irretrievable impacts. Aquatic habitat could be irreversibly affected.
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 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.
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 crop land. There would be an irreversible loss to cropland due to tower and structure construction.
3.19	Transportation	No	No	Project impacts would occur only during construction and would be fully mitigated

Table 2.11-1. Irreversible and Irretrievable Commitments of Resources, Gateway West Project (continued)

Section	Resource	Irreversible Impacts	Irretrievable Impacts	Explanation
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.