

4.0 CUMULATIVE EFFECTS

Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR Part 1508.7). This section presents a discussion of the potential cumulative effects associated with Gateway West and is presented in the following four parts:

- The basis for the assessment, including the regulatory framework, the list of potentially relevant actions, and the process and criteria used in selecting relevant actions for this evaluation;
- A summary table and brief descriptions of the relevant past, present, and reasonably foreseeable actions that could contribute to a cumulative effect when considered with the effects from Gateway West;
- The potential cumulative effects associated with the Proposed Route or its Route Alternatives when considered together with the relevant past, present, and reasonably foreseeable actions; and
- The conclusions reached in this evaluation.

Based on the regulatory framework, the assessment area, the issues raised during and after scoping, and the list of projects presented here, a cumulative impact analysis was conducted for each resource analyzed in Chapter 3. The conclusions reached in each of those analysis segments are presented here. This chapter also addresses the cumulative effects of proposed RMP, MFP, or Forest Plan amendments where the proposed amendment would change land use allocations.

4.1 Basis for Assessment

4.1.1 Regulatory Framework

This evaluation of potential cumulative effects from the Proposed Action is consistent with the following regulations and guidance:

- *CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR Part 1500-1508, 1978 as amended) (CEQ 1986);
- *USEPA’s Procedures for Implementing the Requirements of the Council on Environmental Quality on the National Environmental Policy Act* (40 CFR Part 6 [2009]);
- *CEQ’s Considering Cumulative Effects under the National Environmental Policy Act* (January 1997) (CEQ 1997b);
- *USEPA’s Consideration of Cumulative Impacts in EPA Review of NEPA Documents*, EPA 315-R-99-002 (May 1999); and
- *Bureau of Land Management National Environmental Policy Act Handbook*, H-1790-1 (2008f).

- *Forest Service National Environmental Policy Act Handbook*, FSH 1909.15¹.

4.1.2 Scope of the Analysis

For the purposes of this analysis, the **temporal extent** of the projects to be considered is the expected physical operational service life of this Project (50 years), plus the estimated 10 years needed for substantial site rehabilitation after decommissioning is completed. Past and present events and projects are generally identified and their ongoing impacts discussed. “Reasonably foreseeable actions” are proposed projects or actions that have applied for a permit from local, state, or federal authorities or which are publicly known.

The **spatial extent** of the projects considered in the cumulative effects analysis varies by the project and by resource. In several cases, the Cumulative Impact Analysis Area (CIAA) for a resource is substantially larger than the corresponding project-specific Analysis Area in order to consider an area large enough to encompass likely effects from other projects on the same resource.

The Project “footprint” or direct construction ground disturbance extent is defined in Appendix B and summarized in Chapter 2. The CIAA for direct disturbance starts with an area defined as 500 feet on either side of the centerline of the Proposed Route or Route Alternatives and 25 feet on either side of indicative road location centerlines and includes the actual footprint of other Project-related facilities outside the 1,000-foot-wide area, including temporary facilities such as fly yards and laydown areas. For the purposes of this chapter, that set of polygons is called the Direct Impact Cumulative Impact Analysis Area (DICIAA). That set of polygons was then used to overlay various resource extents. If that set of polygons intersected a larger polygon (for example, a polygon defining big game winter range), then the *entire* larger polygon was included as the CIAA for the Project. For each resource, the CIAA included the set of larger polygons intersected as well as the buffered footprint area. Table 4.1-1 defines the larger polygons considered for each resource as part of the CIAA.

Table 4.1-1. Cumulative Impact Analysis Area by Resource

Resource	Definition of Cumulative Impact Area	Rationale for Area
Visual	5 miles from the Direct Impact Cumulative Impact Analysis Area (DICIAA)	Furthest distance within which this Project is generally visible, given visual attenuation in this Project area.
Cultural	DICIAA for cultural resources without Traditional Cultural Property (TCP) or visual components; for resources for which setting is a component of eligibility, including TCPs, up to 5 miles from the DICIAA.	Likely area impacted includes the proposed maximum right-of-way (ROW) width (250 feet) and a buffer for direct effects and the area from which this Project could be viewed for visual impacts.
Socioeconomics	Counties crossed by Proposed Route and Route Alternatives.	Corresponds with the direct and indirect socioeconomic Analysis Area and includes the constituent municipalities and potentially affected populations.

¹ Available on the Internet at http://www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?1909.15 (accessed 6/6/11)

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Environmental Justice	Counties and Census Block Groups crossed by Proposed Route and Route Alternatives.	Corresponds with the direct and indirect environmental justice Analysis Area.
Vegetation	DICIAA.	Adequately covers the proposed disturbance footprint.
Special Status Plants	DICIAA and any area of known plant population or suitable habitat crossed by the DICIAA.	Potential to damage sensitive plant populations or reduction of habitat available for plants
Invasive Plant Species	Counties crossed by the DICIAA.	Area in which introduction or spread of invasive plant species from this Project could interact with weeds already present or introduced or spread by other projects; political unit where weed control is required and regulated.
Wetlands and Riparian Areas	DICIAA and the extent of each mapped wetland or riparian area crossed by the DICIAA.	Dredge or fill in wetlands, impact to riparian areas.
General Wildlife and Fish: <i>Big game wintering and parturition habitat</i>	Mapped extent of herd unit areas of crucial wintering and parturition crossed by the DICIAA.	Area of potential critical stress for ungulate populations.
General Wildlife and Fish: <i>Raptor nests</i>	Raptor nests within 1 mile of the DICIAA.	Reasonable distance beyond which construction or operation of this or other projects is unlikely to disturb nesting birds.
General Wildlife and Fish: <i>Migratory birds</i>	DICIAA plus 0.5-mile buffer	Reasonable distance beyond which construction or operations of this or other projects is unlikely to disturb nesting birds.
Special Status Wildlife and Fish: <i>Bald eagle</i>	Known locations of eagle nests and suitable winter roosting habitat within 10 miles of the DICIAA.	Potential habitat
Special Status Wildlife and Fish: <i>Black-footed ferret</i>	Non-block-cleared areas that meet USFWS criteria as potential black-footed ferret habitat (USFWS 1989) crossed by the DICIAA.	Areas where presence of ferrets has not been ruled out and where ground disturbance from this or other projects could eliminate, damage, or fragment habitat.
Special Status Wildlife and Fish: <i>BLM / Forest Service Sensitive Fish Species</i>	Water bodies within or crossed by the DICIAA that contain BLM / Forest Service sensitive fish species.	Potential habitat.

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Special Status Wildlife and Fish: <i>Burrowing owl</i>	Known extent of breeding populations and identified suitable habitat for the species that are overlapped by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Canada lynx</i>	Lynx Analysis Units (LAU) and Linkage Habitat that are overlapped by the DICIAA.	Area required for a female home range (Forest Service 2007c). Lynx linkage habitats are areas designated linkage habitat by an interagency intergovernmental panel (Forest Service 2007c).
Special Status Wildlife and Fish: <i>Colorado and Platte River fish and other associated aquatic and riparian species</i>	The watersheds of both rivers where crossed by the DICIAA and where new water withdrawals have been determined to represent an adverse impact on downstream flows.	As mandated by the USFWS in its programmatic consultation on water withdrawals in both basins.
Special Status Wildlife and Fish: <i>Columbian sharp-tailed grouse</i>	Distance from leks: 0.25 mile of the DICIAA	BLM “no surface occupancy” land use designation across Wyoming, as designated within the various BLM RMPs at the time of initial Project design (2008).
	Distance from leks: 0.6 mile of the DICIAA	Based on current “no surface occupancy” requirements.
	Distance from leks: 2 miles of the DICIAA	Based on the average distance (or more) that nesting and brood rearing usually occurs in relation to leks (Giesen and Connelly 1993; Meints 1991; UDNR 2010).
Special Status Wildlife and Fish: <i>Columbia spotted frog and northern leopard frog</i>	Mapped riparian and wetland polygons that are overlapped by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Federally listed invertebrate species</i>	Designated recovery areas for these species that are overlapped by the DICIAA.	Extent of occupied habitat.
Special Status Wildlife and Fish: <i>Gray wolf</i>	Mapped wolf pack polygons that are overlapped by the DICIAA.	Known locations of wolf packs mapped by the Idaho CDC and the WYNDD.

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Special Status Wildlife and Fish: <i>Greater sage-grouse</i>	Core Area polygons that are crossed by the DICIAA (Wyoming).	Areas mapped by the Wyoming Game and Fish Department (WGFD) as important habitat for greater sage-grouse.
	Key and restoration habitat polygons that are crossed by the DICIAA (Idaho).	Areas mapped by Idaho Department of Fish and Game (IDFG) and BLM as areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year including winter, spring, summer, late brood-rearing, fall, transition sites from winter to spring, spring to summer, and summer/fall to winter.
	Distance from leks: area within 0.25 mile of known greater sage-grouse lek	BLM “no surface occupancy” requirements for non-Core Areas as found in the BLM RMPs.
	Distance from leks: area within 0.6 mile of known greater sage-grouse lek	Based on current “no surface occupancy” requirements found in BLM IM Wyoming-2012-019 for Wyoming Core Areas.
	Distance from leks: area within 1 mile of known greater sage-grouse lek	An intermediate distance (between other required distances) assessed due to the uncertainty regarding regulatory requirements for greater sage-grouse lek avoidance.
	Distance from leks: area within 2 miles of known greater sage-grouse lek	Based on the Conservation Plan for the Greater Sage-grouse (Connelly et al. 2000; IDFG 2006).
	Distance from leks: area within 3 miles of known greater sage-grouse lek	An intermediate distance (between other required distances) assessed due to the uncertainty regarding regulatory requirements for greater sage-grouse lek avoidance.
	Distance from leks: area within 4 miles of known greater sage-grouse lek	As required by Wyoming Governor Executive Order 2011-5, and the requirements of BLM Instructional Memorandums (BLM 2009c).
	11-mile buffer around the Project (22-mile-wide analysis corridor)	Based on the requirements of BLM Instructional Memorandums (BLM 2009c), and the Framework for Sage-Grouse Impacts Analysis for Interstate Transmission Lines (BLM 2011a).
Special Status Wildlife and Fish: <i>Grizzly bear</i>	Primary Conservation Area (PCA) crossed by the DICIAA	Minimum seasonal habitat components necessary to support grizzly bear populations, as part of the 1993 Grizzly Bear Recovery Plan.
	Distinct Population Segment (DPS) crossed by the DICIAA	Boundary of the grizzly bear’s Yellowstone Distinct Population Segment.

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Special Status Wildlife and Fish: <i>Proposed Critical Habitat for the Jarbidge River Bull Trout</i>	The extent of the proposed critical habitat for the Jarbidge River bull trout that is crossed by the DICIAA.	Extent of proposed critical habitat.
Special Status Wildlife and Fish: <i>Mountain plover</i>	Known extent of breeding populations as well as identified suitable habitat for the species that are crossed by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Preble's meadow jumping mouse</i>	Known occurrences and identified suitable habitat for the species crossed by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Pygmy rabbit</i>	Known occurrences and identified suitable habitat for the species crossed by the DICIAA.	Areas of known occurrences mapped by the BLM, as well as suitable habitat mapped by Project-specific remote sensing.
Special Status Wildlife and Fish: <i>White- and black-tailed prairie dog</i>	Known occurrences, identified suitable habitat, and mapped colonies crossed by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Wyoming pocket gopher</i>	Mapped areas of possible gopher presences within Wyoming (based on WYNDD data), crossed by the DICIAA.	Database maintained by the WYNDD (most recent edition, see maps in Appendix E for date of edition).
Special Status Wildlife and Fish: <i>Yellow-billed cuckoo</i>	Extent of suitable habitats, mapped through remote sensing crossed by the DICIAA.	Potential habitat.
Special Status Wildlife and Fish: <i>Other BLM sensitive, Forest Service MIS, or Forest Service sensitive species not addressed individually.</i>	Extent of suitable habitats, mapped through remote sensing, that are crossed by the DICIAA.	Potential habitat.

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Geologic hazards	A distance of 100 miles on either side of the transmission line. All other hazards (landslide, subsidence, shallow depth to bedrock), the geologic unit with hazard where that extent is overlapped by the DICIAA.	Likely earthquakes in the Project area would not affect transmission lines more than 100 miles from an epicenter. Other hazards are based on the geologic unit in which they occur.
Minerals	Areas of active resource extraction for coal, trona, phosphate, oil, and gas where that extent is overlapped by the DICIAA.	Potential for impact on mining of coal, trona, phosphate, or on oil and gas extraction, and the potential for resource extraction impacts to interact with ground-disturbing effects from this and other projects.
Paleontology	Fossil-bearing formations where the formation is overlapped by the DICIAA.	Potential for impact to fossil-bearing formations.
Soils	Sensitive soil areas (highly erodible, highly susceptible to compaction, and other low reclamation soils) that are overlapped by the DICIAA.	Impact restricted to immediate Project area.
Water	Watersheds of waterbodies overlapped by the DICIAA with impacts in or adjacent to the waterbody.	Impact from Project may affect areas lower in watershed; all projects in watershed need to be considered.
Land Use	BLM: Resource Management Plan Area crossed by DICIAA. Forest Service: National Forest crossed by DICIAA. Private: County and municipality crossed by DICIAA.	Level at which land use regulations, plans, or authorizations are in effect.
Agriculture	Irrigated and dryland farming areas where crossed by DICIAA.	Areas of contiguous farmland, while not necessarily under one ownership, typically are part of a local community.
Transportation	Airports within 3 miles of transmission line centerline. Length and number of existing roads used for Project. Length and number of existing roads to be reconstructed or new roads to be built for the Project.	Airport distance defined by controlled airspace; roads area varies by type of road.
Air Quality	Statewide air quality areas.	To provide an understanding of current air quality in Wyoming and Idaho, to identify present projects that contribute to air quality degradation, and to understand how the electric generation carried by the Gateway West and other transmission lines, present and proposed, contribute to air quality issues.
Electric Effects	ROW width.	Electrical effects, including magnetic field and stray voltage, do not occur outside the ROW (see Section 3.21).

Table 4.1-1. Cumulative Effects Analysis Area by Resource (continued)

Resource	Definition of Cumulative Impact Area	Rationale for Area
Public Health and Safety	Areas occupied by people where crossed by DICIAA.	Construction and operation of the transmission line may affect the health and safety of people.
Noise	Construction: 900 feet from construction noise sources; Operation: ROW width.	Areas beyond which no noise from construction or operation of Gateway West would be detectable above USEPA recommended levels (see Section 3.23).

4.1.3 Land Management Plan Amendments

In several cases, the Proposed Route or Route Alternatives would be incompatible with land allocation classifications (frequently but not exclusively VRM classifications) assigned to the federally managed lands they would cross. Chapter 2 summarizes all plan amendments, Appendix F-1 contains details and analysis of each proposed amendment to BLM land management plans, Appendix F-2 contains details and analysis of each proposed amendment to Forest Service land management plans, and Appendices G-1 and G-2 contain maps and visual analysis documentation, including photographs and simulations, in support of the amendments analyses for BLM and Forest Service land management plans, respectively.

The purpose of this section is to examine the possible cumulative effects to resources of the various plan amendments that would be necessary to permit the Project. These amendments are connected actions to the Project (“but for” the Project, these amendments would not be considered). The possible cumulative effects of the amendments themselves are addressed here, separately from the Project cumulative effects but considered with them, because the decision whether to approve plan amendments is a separate decision under the law for both the BLM and the Forest Service.

In most cases, the amendments to the land management plans are designed to allow the Project to be constructed and operated without changing the underlying land allocations. Where that is the case, there are no cumulative effects of the plan amendment that are not fully captured in the cumulative effects of the Project itself. The effects of those amendments are considered in detail by resource, below, but not addressed further in this section. Where that is not the case, the resultant plan amendment could have cumulative effects to be considered as part of the overall Project cumulative effects. The impact of the underlying land use allocation revision is analyzed in this section across the extent of the polygon proposed for revision. For example, if a polygon mapped as VRM Class II is proposed to be changed to VRM Class III, the impact of that change is taken into consideration as part of the cumulative effects of the Project.

4.1.3.1 Casper Resource Management Plan

To consider permitting the construction and operations of the Segment 1W(a) and 1W(c) Proposed Routes, no amendments to the Casper RMP would be required.

4.1.3.2 Medicine Bow National Forest Land and Resource Management Plan

A plan amendment to the Medicine Bow Forest Plan is needed to allow road construction and reconstruction associated with the Segment 1W Proposed Routes where they would cross an ROS of Semi-primitive Motorized as well as allowing the Project to cross goshawk and leopard frog habitat and to have a visual impact inconsistent with adjacent SIOs. The proposed plan amendment would change the ROS for road construction and reconstruction, where it occurs outside of the WWE corridor, from Semi-primitive to Roaded Natural. While the amendment would result in changing management objectives for the ROS, it would do so specific to Project action areas; it would therefore have project-level cumulative effects and would not result in cumulative effects of management-level change that would apply to areas outside of the Project. For cumulative effects related to Project activities, see Section 4.4.

4.1.3.3 Rawlins Resource Management Plan

No changes in the underlying management plan direction are needed to permit the Project in the Rawlins RMP area.

4.1.3.4 Green River Resource Management Plan

Proposed Amendments for BLM's Preferred Route: While an amendment would be required for this RMP to permit the Project, it would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: There are no alternatives for this portion of the Preferred Route (Segment 4 of the Proposed Route). No amendments are associated with alternative routes in areas managed by the Green River RMP.

4.1.3.5 Kemmerer Resource Management Plan

Proposed Amendments for BLM's Preferred Route: While an amendment would be required for this RMP to permit the Project, it would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: Several Route Alternatives would not be in conformance with requirements of the Kemmerer RMP. The Kemmerer RMP Decisions 6051, 6053, and 6054 protect visual resources and determine visual management objectives for VRM Class II areas and Historic Trails and Places. These decisions would be rewritten to allow the development of this project. In two places, this would include rewriting Decision #6051 to reclassify approximately 281,187 acres to VRM III to allow for the Project construction, as follows:

Alternative routes 4B, 4C, 4D, and 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.

Additional amendments that are required would be one-time allowances for this Project only and therefore would have no additional cumulative effects beyond those of the Project itself.

Changes in the VRM designation could encourage further transmission development to be sited in areas changed from VRM Class II to VRM Class III. The 500-kV DC Zephyr line, is tentatively proposed to follow the Gateway West alignment. The Zephyr project will file a proposed route with the BLM in 2013. If it moves forward in the future, a change of VRM classification to VRM Class III could encourage its construction in a similar area if Alternatives 4B, 4C, or 4D are selected. The change in designation would not affect currently authorized coal mining taking place in the area. No other reasonably foreseeable projects would be located within the area proposed for VRM amendment. Therefore, the impact of the change would largely be to encourage future transmission development, if any, to follow the Gateway West alignment through the Kemmerer FO.

4.1.3.6 Caribou National Forest Land and Resource Management Plan

Portions of Segment 4 of the Project cross portions of the Caribou-Targhee NF currently designated as Prescription 5.2—Forest Vegetation Management, Prescription 2.7.2 (Elk and Deer Winter Range), and Prescription 3.2—Semi-Primitive Recreation, and Prescription 2.8.3—Aquatic Influence Zone. This portion of Segment 4 is in Idaho. Two alternatives through the NF and one alternative that avoided the NF were considered in initial scoping; however, only the Forest Service's Preferred Route (Alternative 4G) and the Proponents' Proposed Route were considered in detail. Both cross the NF.

Proposed Amendments for BLM's Preferred Route: An amendment to the Caribou Forest Plan would be needed to be consistent with Forest Plan direction to designate the ROW for Gateway West as Management Prescription 8.1—Concentrated Development Areas. The corridor would be 9.4 miles long by approximately 300 feet wide (the ROW plus additional areas cleared to create an uneven boundary) with an ROS of Roaded Natural. The area from the edge of the ROW out 375 feet and within 500 feet of new access roads outside this area will have an ROS of Roaded Natural. Prescription 8.1 does not contain retention or partial retention as stated in the Forest Plan description (page RFP 4-78): "Lands where Category 8 prescription are applied are likely to be permanently altered by human activities beyond the level needed to maintain appearing natural landscapes...". Therefore, the effect of changing the current management prescriptions to Prescription 8.1 would be to remove these acres from the Partial Retention and Retention VQO categories.

This corridor is too small to accommodate any additional transmission lines or other utility infrastructure. Any additional transmission lines proposed through this area would need a separate plan amendment. Therefore, the amendment would have no additional cumulative impacts beyond those of the Project itself, discussed in Section 4.4, below.

Amendments Associated with Alternative Routes: The alternative route analyzed in detail (the Proposed Route) would have the same amendment, with modifications for area based on the difference in length and location of the route, as the Preferred Route associated with it. Effects would be as described above for the Preferred Route.

4.1.3.7 Pocatello Resource Management Plan

Proposed Amendments for BLM's Preferred Route: No amendments are proposed for the BLM's Preferred Route through land managed under the Pocatello RMP.

Amendments Associated with Alternative Routes: While an amendment would be required for this RMP to permit the Project, it would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.1.3.8 Cassia Resource Management Plan

Proposed Amendments for BLM's Preferred Route: No amendments are proposed for the BLM's Preferred Route through land managed under the Cassia RMP.

Amendments Associated with Alternative Routes: Alternatives 7E and 7K would not conform to VRM objectives in two areas depending on the route selected. Alternative 7K would cross VRM Class II and III areas, and an isolated parcel managed as VRM Class II would be crossed by Alternative 7E.

For Alternative 7E, which would affect the area discussed in Appendix G-1 as AOI CA-3:

“VRM classes are designated as shown in the Cassia RMP; however, areas associated with the Gateway West Transmission Line Project will be reclassified as follows: 39 acres in the Spring Canyon area from VRM II to VRM III.”

For Alternative 7K, which would affect the area discussed in Appendix G-1 as AOI CA-2:

“VRM classes are designated as shown in the Cassia RMP; however, areas associated with the Gateway West Transmission Line Project will be reclassified as follows: 1,381 acres Cottonwood Creek area from VRM III to VRM IV.”

For Alternatives 7E or 7K, the areas that would be reclassified are found on BLM-managed public lands that are adjacent to private lands that are not managed under a VRM system. In each case, they are near areas of irrigated agriculture. There are no other transmission lines or other projects known in this area. However, if either Alternative 7K or 7E is selected, other transmission lines proposed for this general area could choose to follow this same route and would likely be located at least 1,500 feet from the Gateway West transmission lines. These lines could locate in these areas without further amendment of underlying land use plan management requirements for visual resources.

Overall, the VRM class changes proposed for this area are small, isolated from one another, and often adjacent to private land not managed for VRM objectives. Therefore, the cumulative effects of these plan amendments beyond those of the proposed Project itself would be negligible.

4.1.3.9 Sawtooth National Forest Land and Resource Management Plan

Proposed Amendments for BLM's Preferred Route: The Preferred Route would not cross the Sawtooth NF.

Amendments Associated with Alternative Routes: While an amendment would be required for this RMP to permit the Project, it would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.1.3.10 Twin Falls Management Framework Plan

Proposed Amendments for BLM's Preferred Route: While amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: While amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.1.3.11 Jarbidge Resource Management Plan

Proposed Amendments for BLM's Preferred Route: The Segment 9 Preferred Route would cross 1.7 miles of VRM Class II within the WWE Corridor. Segment 8 of the Preferred Route would cross 3.2 miles of VRM Class I land. The Jarbidge RMP protects visual resources. These RMP decisions would be rewritten to allow the development of this Project.

Segment 9 of the Preferred Route would cross VRM Class II land within the WWE corridor. The amended VRM decision would read (new language in italics):

“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.*”

The Segment 8 Preferred Route would cross VRM Class I land associated with the Oregon NHT, which is not part of the WWE corridor. As a powerline would not conform to the VRM Class I objectives, the new VRM decision would read (new language in italics):

“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 decision and Map 9 are amended to accommodate a major powerline R/W. Approximately 5,200 acres of VRM Class I area associated with the Oregon Trail is Re-classified to VRM Class III.*”

The Segment 8 Preferred Route would cross land managed as a utility restricted area. As a powerline would not conform to this restriction, the new decision would read (new language in italics):

“MUA-3 Utility avoidance/restricted area – three Paleontological areas (Sugar Bowl, Glens Ferry, & McGinnis Ranch) and Oregon Trail ruts (7,200 acres/22.5 miles) to overhead and surface disturbance and underground utilities. *The current Lands decision is amended to reclassify the area identified as restricted in Section 35, T. 04 S., R. 09 E. to ‘avoidance’ in order to accommodate a 500kV powerline right of way.*” (Jarbidge RMP 11-19)

In areas where the VRM class is changed from Class I or II to Class III, an amendment would result in the area being managed at a lower protection level. Amending the RMP to lower the VRM classification may encourage additional development in these areas.

In the area near the Oregon NHT in the Jarbidge FO, ownership is complex, with primarily private lands in the Glens Ferry area and along the Snake River and BLM-managed lands predominating in the foothills. Changes in VRM class within the WWE corridor would allow additional utilities to be installed in the corridor without an additional plan amendment. Although this area had been designated with very restrictive visual classifications before the corridor was declared, changing those restrictions to reflect the intent of the utility corridor is consistent with the policy that established the corridor. Effects are minimal because of the distribution of ownership and because only a narrow area within the WWE corridor or near existing transmission lines would be changed. It is possible that an additional transmission line might also fit within the changed VRM area and could be permitted without an additional plan amendment. However, there would be no other disturbance that could reasonably be expected to fit into the area with changed VRM. Additional disturbance outside the permitted area could not occur without additional amendment actions.

The revision of VRM classes and reclassification of the area from “restricted” to “avoidance” along the Segment 8 Preferred Route would also allow for an additional transmission line (assuming 1,500-foot spacing) immediately parallel to the proposed Project without additional plan amendments. While there are currently no other transmission lines in the eastern VRM reclassification areas, there are existing lines in the northeast portion of the section where the land management objective would be changed from “restricted” to “avoidance.” The areas that would be changed are isolated from one another, however, and often adjacent to private land not managed for VRM objectives. While VRM objectives would be relaxed somewhat, it still is an area where utilities are discouraged. Other RMP objectives, including those for preservation of the Oregon Trail and the paleontological areas, would still be in place and any additional disturbance would have to either avoid or mitigate for impacts to the other resources. Therefore, the cumulative effects of the plan amendment would be minimal.

While additional amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: Alternative 9B would cross 1.6 miles of VRM Class I within the WWE corridor. Alternative 9D/9G would cross 0.15 mile of VRM Class II following an existing transmission line route. Alternative 8A would cross 6.4 miles of VRM Class I land. The Jarbidge RMP protects visual resources. These RMP decisions would be rewritten to allow the development of this Project (affects AOIs BOP-1/J-3, J-4, and J-5).

The amended VRM decision would read (new language in italics):

“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; *however, the area within the WWE Corridor will be reclassified as VRM III.*”

Alternative 8A would cross VRM I land associated with the Oregon NHT. As a powerline would not conform to the VRM I objectives, the new VRM decision would read (new language in italics):

“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 decision and Map 9 are amended to accommodate a major powerline R/W. Approximately 2,800 acres of VRM Class I area associated with the Oregon Trail is Re-classified to VRM Class III.*”

Alternative 8A would cross land managed as a utility restricted area. As a powerline would not conform to this restriction, the new decision would read (new language in italics):

“MUA-3 Utility avoidance/restricted area – three Paleontological areas (Sugar Bowl, Glens Ferry, & McGinnis Ranch) and Oregon Trail ruts (7,200 acres/22.5 miles) to overhead and surface disturbance and underground utilities. *The current lands decision is amended in the area identified as restricted in Section 2, T. 05 S., R. 09 E. to reclassify these areas as avoidance to accommodate a 500kV powerline right of way.*”

“MUA-7 c) Lands 1. Utility avoidance/restricted area – *no surface disturbance within 330 feet of the Oregon Trail, Dove Springs (160 acres), and 96 paleontological sites (surface and underground).*”

In areas where the VRM class is changed from Class I or II to Class III, an amendment would result in the area being managed at a lower protection level. Amending the RMP to lower the VRM classification may encourage additional development in these areas.

In the area near the Oregon NHT in the Jarbidge FO, ownership is complex, with primarily private lands in the Glens Ferry area and along the Snake River and BLM-managed lands predominating in the foothills. Changes in VRM class within the WWE corridor would allow additional utilities to be installed in the corridor without an additional plan amendment. There are currently no other transmission lines adjacent to the Alternative 8A alignment; however, there are existing lines approximately one mile north and south of this alignment. Effects are minimal because of the distribution of ownership and because only a narrow area within the WWE corridor would be changed. It is possible that one or two other transmission lines in addition to Gateway West could be placed in the corridor; however, the only additional disturbance allowed as a result of this management change would be restricted to the corridor. In addition, because the VRM is not changed outside of the corridor, no other disturbance could be permitted without an additional plan amendment. Gateway West and other projects would still be expected to comply with all other requirements of the RMP.

While additional amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.1.3.12 SRBOP Resource Management Plan

Proposed Amendments for BLM's Preferred Route: While an amendment would be required for this RMP to permit the Project, it would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: A plan amendment would be associated with the following Route Alternatives if Segment 8 of the Proposed Route or any of Alternatives 8D, 8E, 9D, 9F, 9G, or 9H is selected. Portions of all these routes are located in an area where motorized vehicle use is restricted to designated routes. A review of RMP objectives and consultation with the Boise District staff indicates that the areas closed to motorized vehicles cannot be amended for Segment 8 (Halverson Bar – 1,150 acres) or Alternative 9D/9G (Cove – 1,600 acres) and still meet the Management Objective to: “Provide motorized vehicle access to the majority of the NCA while reducing the number of unnecessary routes and increasing the non-motorized opportunities.”

Spanning the canyon in these areas would not be feasible, and restrictions on crossing Cove and Halverson Bar cannot be amended to meet RMP objectives; therefore, Segment 8 of the Proposed Routes and Alternative Routes 9D and 9F cannot be approved as currently designed (alternatives to these crossings have been developed and are included in the analysis). Amendments are proposed for routes that cross the SRBOP area for visual resources, cultural resources, new corridor restrictions, and for SRMAs, as follows.

For the Proposed Route in Segment 8 (proposed change in italics):

“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 powerline R/W.

For Alternatives 8E, 9D, and 9F (proposed change in italics):

“Manage the areas along the Oregon Trail and the Snake River Canyon as VRM Class II, the OTA as Class IV and remaining areas as Class III. Approximately 3,100 acres of Class II areas associated with the Oregon Trail and scenic values associated with the Snake River Canyon is designated as Class III to accommodate a major powerline R/W

For Alternative 9G/9H (proposed change in italics):

“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.”

The Segment 8 Proposed Route and Alternatives 8E, 9D, 9F, 9G, and 9H would pass through the Snake River SRMA. This use is not in conformance with the SRMA designation based on “recreational, scenic or cultural values.” An amendment reducing the designated area is proposed for the Project to be in conformance with the RMP (changes in italics):

“This SRMA consists of 15,900 acres in the Snake River Canyon downstream from Grandview, Idaho that is managed for the protection of cultural and scenic values. *The SRMA designation has been reduced by approximately 6,400 acres to accommodate a major powerline.*”

Alternatives 9D and 9G would pass through the C.J. Strike SRMA. This use is not in conformance with the SRMA designation based on “recreational, scenic or cultural values.” An amendment reducing the designated area is proposed for the Project to be in conformance with the RMP (changes in italics):

“C.J. Strike SRMA: This SRMA consists of 16, 900 acres surrounding C.J. Strike Reservoir along the Snake River. The purpose of the SRMA is to provide enhanced recreation management associated with the reservoir, and protection of the Oregon Trail adjacent to the reservoir. *The SRMA designation has been reduced by approximately 3,100 acres to accommodate a major powerline ROW.*”

The amendments reducing the area of the SRMA would affect a large block of BLM-managed lands within the SRBOP. This change would allow additional development in the area withdrawn from the SRMA without additional plan amendments. It is likely that any additional transmission lines seeking to interconnect from the east into the Hemingway Substation would follow the route that is approved for this Project. The cumulative effect of the plan amendment would not differ substantially from the effect of the Project itself, particularly given that no projects other than possible future transmission lines are proposed for the area, whose cumulative effects are analyzed with the direct Project impacts.

While additional amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.1.3.13 Bennett Hills/Timmerman Hills Management Framework Plan

Proposed Amendments for BLM's Preferred Route: The Segment 8 Preferred Route crossing of the Oregon NHT would impact visual resources and archeological resources; thus, the Project would not be in conformance with the Bennett Hills/Timmerman Hills MFP.

One amendment would have an extent larger than the transmission line ROW itself because of reclassification of visual management areas.

The visual resource protection would be rewritten to allow development of this Project. The amended MFP decision (changes in italics) would read:

“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).*”

The amendment changing the VRM II classification to VRM Class III would change the classification of lands within 3,000 feet of an existing transmission line. This may result in additional up to two additional transmission lines being located along this route, which would result in additional impacts to resources managed under the MFP. The

cumulative effect of the plan amendment would not differ substantially from the effect of the Project itself, particularly given that no projects other than possible future transmission lines are proposed for the area.

In addition, to allow the crossing of the Oregon NHT, the amended MFP decision (changes in italics) would read:

“Prohibit all land disturbing developments *within 330 feet of the Oregon Trail and manage archeological sites as required by Section 106 of the National Historic Preservation Act.*”

Allowing land-disturbing developments up to 330 feet of the Oregon NHT could potentially affect the ability to conform to agency policy of protecting archaeological sites; however, stipulations for managing archeological sites as required by the NHPA should minimize this possibility. Additionally, EPMs (CR-1 through CR-8) would be aimed at reducing these impacts and construction would occur in a manner that would avoid disturbing important historic resources.

Amendments Associated with Alternative Routes: No Route Alternatives would cross the lands managed by the Bennett Hills/Timmerman Hills MFP. Therefore, no amendments to this MFP are proposed for Route Alternatives.

4.1.3.14 Bruneau Management Framework Plan

Proposed Amendments for BLM's Preferred Route: No amendments are proposed for the Preferred Route (which incorporates Alternative 9E as revised) and no changes in the underlying management plan direction are needed to permit the Project in the lands managed by the Bruneau MFP.

Amendments Associated with Alternative Routes: Portions of Segment 9 of the Proposed Route and Alternatives 9E and 9F/H would cross through the Bruneau MA.

The Bruneau MFP includes management objectives for visual resources. A 1,000-foot section of Segment 9 of the Proposed Route would cross an area within the WWE corridor that is classified as VRM Class II; therefore, an amendment to the MFP to allow impacts to visual resources is needed.

Segment 9 of the Proposed Route would cross a parcel designated as VRM Class II near Castle Creek. The recently completed Visual Inventory recognizes this parcel as VRM Class III for inventory purposes. With these factors in mind, the visual resource restrictions would be rewritten to reclassify the area.

The entire VRM Class II parcel near Castle Creek will be reclassified to VRM Class III.

Changing the VRM class would also facilitate siting future utility lines within the WWE corridor, which would add to cumulative effects in the area. The cumulative effect of the plan amendment would not differ substantially from the effect of the Project itself, particularly given that no projects other than possible future transmission lines are proposed for the area.

4.1.3.15 Kuna Management Framework Plan

Proposed Amendments for BLM's Preferred Route: While amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

Amendments Associated with Alternative Routes: While amendments would be required for this RMP to permit the Project, they would not result in changes to land classification or changes in management of the area exclusive of Gateway West.

4.2 Projects or Actions with Potential for Cumulative Effect with Gateway West

Projects within the resource CIAAs with potential to add to the direct and indirect effects of Gateway West were considered. Those projects most likely to cause cumulative effects are those that have effects similar to those of Gateway West since they tend to impact all the same resources across multiple jurisdictions in ways similar to those of Gateway West. Other projects also affect one or more resources and are considered together with the effects from Gateway West. For ease of analysis, projects with the potential for cumulative effects are presented in the following categories:

- Other transmission lines in or near the Project area or serving similar generation or load areas (Figures E.24-1 and E.24-2 in Appendix E);
- Other linear projects in or near the Project area, such as roads and pipelines;
- Energy generation projects, including coal, gas, wind, geothermal, and hydroelectric (Figure E.24-3 in Appendix E);
- Oil, gas, and mineral extraction, including trona, coal, and phosphate (Figure E.24-4 in Appendix E);
- Other development, including subdivision of lands for commercial, industrial, or residential development; and
- Existing and proposed land uses or restrictions on land uses, including timber harvest or vegetation management, hunting, and OHV use.

4.2.1 Past and Present Actions

Past and present actions have contributed to the affected environment or the context of the proposed Project. While the sections describing the affected environment (Chapter 3) take these actions or events into consideration in a general way, the list and description below provide details on the location, scale, and duration of a variety of actions that have effects on some of the same resources that would be affected by the Project.

4.2.1.1 Existing Transmission Lines

High-voltage (typically 115-, 230-, 345-, or 500-kV) transmission lines carry electricity long distances and begin and end in substations that serve either generation or load centers. In some cases a formal utility corridor has been designated where these transmission lines cross public lands, but in other cases the lines are recognized as utility crossings not in a corridor.

Major transmission lines in the CIAAs for Gateway West are found in Table 4.2-1 and are shown in Figures E.24-1 and E-24.2 of Appendix E. These transmission lines vary from 115 kV to 500 kV. Several of the high-voltage transmission lines carry electricity from the coal-fired power plants located in Wyoming to interconnection points in Wyoming and Idaho, where they feed the western grid. Others carry hydroelectric energy from the power plants along the Platte and Snake Rivers, among others, to interconnection points with the western grid. These transmission lines have been in service for variable amounts of time, but generally between 20 years and 40 years.

Table 4.2-1. Existing Transmission Lines that Parallel or Cross Gateway West

Proponent	Project	Gateway West Segment	Gateway West Proposed Route Mileposts (parallel)	Gateway West Proposed Route Milepost (crossed)
Hot Springs Rural Electric Assoc. Inc.	115-kV Utah Mall to Utah Shovel	1W(a), 1W(c)	32-34.8 (Segment 1W(a)); 30.9-33.6 (Segment 1W(c))	32 and 34.9 (Segment 1W(a))
PacifiCorp	230-kV Johnston to Casper	1W(a)		1.1
PacifiCorp	230-kV Spence to Johnston	1W(a), 1W(c)	0-2 (Segment 1W(c))	3.5 (Segment 1W(a))
PacifiCorp	230-kV Difficulty to Dave Johnston	1W(a), 1W(c)	Proposed Action is to reconstruct this line	multiple crossings of 1W(a), 1W(c)
Western	115-kV Medicine Bow to Seminole	1W(c) , 2		71.5 (Segment 1W(c)); 0.1 (Segment 2)
Western	115-kV Oasis to Kortez	1W(c) , 2		71.5 (Segment 1W(c)); 0.1 (Segment 2)
Western	115-kV Tap to Casper	1W(a), 1W(c)		4.8 (Segment 1W(a)); 3.6 (Segment 1W(c))
Western	115-kV Tap to Casper North	1W(a), 1W(c)		4.8 (Segment 1W(a)); 3.6 (Segment 1W(c))
PacifiCorp	230-kV Miners to Difficulty	1W(a), 1W(c)	44.4-69.6 (Segment 1W(c))	73.2 (Segment 1W(a))
PacifiCorp	115-kV Medicine Bow Coal Co. to Miners	2		18.4
PacifiCorp	230-kv Platte to Miners	2		26.6
Tri-State G&T Assoc.	115-kV Platte to Trowbridge	2		32.8
PacifiCorp	230-kV Platte to Point of Rocks	2, 3	50.1–91.8 (Segment 2); 0–17 (Segment 3)	1 (segment 3)
PacifiCorp	230-kV Mustang to Bridger	3, 4	21.3-43.1 (Segment 3)	43.4 (Segment 3); 1.8 (Segment 4)
PacifiCorp	230-kV Rock Springs to Bridger	4		2.3
PacifiCorp	230-kV Point of Rocks to Bridger	4		2.3
PacifiCorp	345-kV Bridger to Goshen	4	4.9-45.7, 57.1-136.8, 141.4-142.4	100, 143.1
PacifiCorp	230-kV Rock Springs to Atlantic City	4		24.6
PacifiCorp	230-kV Monument SW to Shute Creek	4		70.5
PacifiCorp	138-kV Oneida to Ovid	4		152.2
PacifiCorp	Two 138-kV lines from Grace to Oneida	4		177
PacifiCorp	345-kV Bridger to Kinport	4, 5, 7	4.9-45.7, 57.1-110.5, 112.9-136.8, 141.4-197.6 (Segment 4)0; –12.3 (Segment 5); 0–9.2 (Segment 7)	100 (Segment 4); 12.3 (Segment 5); 9.2 (Segment 7)
PacifiCorp	345-kV Bridger to Borah	4, 5, 7	4.9-45.7, 57.1-110.5, 112.9-136.8, 141.4-197.6 (Segment 4)0; –12.3 (Segment 5); 0–9.2 (Segment 7)	100 (Segment 4); 12.3 (Segment 5); 9.2 (Segment 7)

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Table 4.2-1. Existing Transmission Lines that Parallel or Cross Gateway West (continued)

Proponent	Project	Gateway West Segment	Gateway West Proposed Route Mileposts (parallel)	Gateway West Proposed Route Milepost (crossed)
PacifiCorp	345-kV Borah to Ben Lomond	4, 5, 7	196.8-197.5 (Segment 4); 0-12.3 (Segment 5); 0-9.2 (Segment 7)	12.3 (Segment 5); 9.2 (Segment 7)
PacifiCorp	230-kV Treasureton to Brady	4, 5, 7	196.8-197.5 (Segment 4); 0-12.3 (Segment 5); 0-9.2 (Segment 7)	12.3 (Segment 5); 9.2 (Segment 7)
PacifiCorp	138-kV American Falls to Malad	5, 7		27.3 (Segment 5); 26.7 (Segment 7)
Idaho Power	230-kV Borah to Brady	5		55.5
Idaho Power	138-kV Adelaide to American Falls	5		55.5
Idaho Power	345-kV Midpoint to Kinport	5		42.2
Bonneville Power Administration	138-kV Minidoka to Unity	7		78.3 and 81
Bonneville Power Administration	115-kV Anderson Ranch to Mountain Home	8	68.4-70.6	
Idaho Power	230-kV Boise to Midpoint	8	0-86.2 (3 lines)	0.2, 55.6
Idaho Power	230-kV Bennett Mountain to RTSN	8		68.1
Idaho Power	138-kV Lower Falls to Midpoint	8	0-1.5	
Idaho Power	138-kV Black Mesa to Mountain Home	8	52-68.4	50.1
Idaho Power	138-kV Mountain Home to ELMR	8		68.8
Idaho Power	138-kV Boise to Mountain Home	8	68.4-86.2	
Idaho Power	138-kV Bowmont to Canyon Creek	8		113.5
Idaho Power	138-kV Upper Salmon B to Mountain Home	8		68.2
Idaho Power	138-kV Lower Falls to Toponis	8		19.1
PacifiCorp	500-kV Burns to Midpoint	8, 9	0-1.3, 50.1-116.6, 126.4-131.5 (Segment 8)	50.1, 127.6 (Segment 8); 161.9 (Segment 9)
Idaho Power	138-kV Lower Falls to Wells	9		25.9
Idaho Power	138-kV Raft SKSN to Canyon Creek	9		114.5
Idaho Power	138-kV Raft SKSN to CJ Strike	9		114.3
Sierra Pacific Power Co	345-kV Humboldt to Midpoint	7, 10	0-6.6, 7.8-11, 20.5-34.3 (Segment 10)	118 (Segment 7)
Idaho Power	138-kV Wilson Lake Hydro to Dale	10		14.3
Idaho Power	345-kV Adelaide to Midpoint	10	0-1.3	
Idaho Power	138-kV Notch Butte to Midpoint	10		0.2
Idaho Power	345-kV Midpoint to Hunt	10	0-11	
Idaho Power	138-kV Shoshone Falls to Hunt	10		18.3

Source: Ventyx 2010

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Distribution lines (those carrying 32 kV or below) are typically much shorter (40 to 50 feet in height rather than 100 feet or taller) and typically run much shorter distances than high-voltage transmission lines. Distribution lines are associated with residential development, agricultural land uses, and with oil and gas development in many areas.

Idaho Power reports that hundreds of miles of their system currently cross irrigated crop or pasture lands. They report that of the 1,162 miles of existing 230-kV lines in service, 411 miles cross irrigated lands, and of the 576 miles of existing 345-kV lines in service, 102 miles cross irrigated lands. They further report hundreds of miles of lower-voltage transmission and sub-transmission lines across irrigated agriculture (IPC 2010b).

4.2.1.2 Existing Pipelines

Large-diameter pipelines (12 inches or larger for liquids and 24 inches or larger for natural gas) are used to transport liquid petroleum products and natural gas long distances. These networks typically start at an initial injection station where product is injected into the line and end at a final delivery station where the product is distributed. Other major pipeline components include compressor stations for natural gas or pump stations for liquids used to help move the product through the pipe, block valves capable of isolating portions of the pipeline should a leak occur, and other valves and stations used for regulating pressure within the pipeline or allowing the product being transported to be delivered or inspected. Pipelines are typically buried within a designated ROW. The permanent ROW varies in width depending on the easement, the pipeline system, the presence of other nearby utilities, and the land use. These ROWs are kept clear of deep-rooted vegetation to allow the pipeline to be safely operated, aerially surveyed, and properly maintained. For larger diameter pipelines, a system of access roads is required to facilitate maintenance. Table 4.2-2 summarizes existing pipelines in the CIAA.

Pipeline corridors that parallel Gateway West are most important for cumulative effects because of their contribution to habitat fragmentation and to land use limitations. There are several pipelines that parallel Gateway West. A 24-inch pipeline operated by Williams Northwest Pipeline parallels Gateway West for the longest distance along Segments 7 and 8, a distance of approximately 85 miles. Two pipelines operated by the Wyoming Interstate Limited and Colorado Interstate Pipeline Company, respectively, parallel Segment 2; the latter also parallels Segment 3. A pipeline operated by ExxonMobil Pipeline Company parallels Segment 4, as does one operated by Rocky Mountain Pipeline System LLC. Segment 4 and Alternative 4B are paralleled by a pipeline operated by the Chevron Corporation; Segment 4B is also paralleled by a pipeline owned by Rocky Mountain Pipeline Systems LLC. The Overland Pass natural gas liquids pipeline is the most recently constructed in the vicinity of Gateway West. It parallels Gateway West in Segments 2, 3, and 4 as a 16-inch pipeline from about MP 30 west to the Creston Substation area, and then as a 14-inch pipeline from there another 20 miles west along the beginning of Segment 3. The Gateway West southern alternatives for Segment 4, Alternatives 4B through 4E, parallel the Overland Pass pipeline from MP 15 to MP 35. Table 4.2-2 provides the approximate distances each of these pipelines parallels Gateway West.

Table 4.2-2. Existing Large Diameter Pipelines within the Gateway West Study Area

Operator	Diam. (in)	Product Transported	Parallels Gateway West		Comments
			Segment/ Alternative	Mileposts	
Kinder Morgan, Inc.	22	Crude	1W(a)-B	1.5-8.2	Crosses Alt 1W(a)-B
Pacific Energy Partners	12	Crude	2, 2A, 2B, 3	28-91 (Segment 2), All (Segment 3, Segment 3A, Alternative 2A, Alternative 2B)	Crosses Segment 2, 3, Alternatives 2A, 2B
Colorado Interstate Gas Company	12-24	Natural Gas	2, 2A, 2B3, 3, 4, 4B, 4C, 4D, 4E, 4F	27-91 (Alternative 2), All (2A, 2B, 3), 0-27 (Segment 4)	Crosses Segment 2, 3, 4, Alternative 2A, 2B, 4B, 4C, 4D, 4E, 4F
Kinder Morgan Interstate Gas Transmission LLC	12	Natural Gas	–	–	Crosses Segment 1W(a), 1W(c), Alternative 1W(a)-B
ExxonMobil Pipeline Company	20	Crude	–	–	Crosses Segment 4
Rocky Mountain Pipeline System LLC	16	Crude	–	–	Crosses Segment 4
Chevron Corporation	16	Crude	4, 4F	62-70.1 (Segment 4), 10.4-18.5 (Alternative 4F)	Crosses Segment 4, Alternatives 4B, 4C, 4D, 4E, 4F
Williams Energy Services LLC	30	Natural Gas	–	–	Crosses Segment 4, 4B, 4C, 4D, 4E, 4F
Northwest Pipeline Corp	16-30	Natural Gas	7D, 8B, 9B	0-2.6 (Alternative 7D), 10.1-16.5 (Alternative 8B), 23-35.6 (Alternative 9B)	Crosses Segment 4, 5, 7, 8, 10, Alternative 4B, 4C, 4D, 4E, 4F, 5C, 5D, 5E, 7C, 8B, 8C, 9B, 9D, 9E, 9G
Questar Pipeline Co.	16	Natural Gas	–	–	Crosses Segment 4, Alternatives 4B, 4C, 4D, 4F
Rockies Express Pipeline LLC	36	Natural Gas	–	–	Crosses Segment 3
Rockies Express Pipeline LLC	42	Natural Gas	2	28-42.1	Crosses Segment 2, Alternative 2A, 2B
Wyoming Interstate Co. Ltd.	36	Natural Gas	2A, 3	2.7-3.9 (Alternative 2A), 21.3-23.1, 44.5-45.9 (Segment 3)	Crosses Segment 2, 3, 4, Alternatives 2A, 2B

Source: Ventyx 2012; PennWell 2008

Large-diameter pipelines are typically associated with networks of smaller distribution pipelines designed to transport product to consumers, tanks, or storage facilities. They are smaller in diameter and do not require the infrastructure (e.g., roads) associated with larger pipelines.

4.2.1.3 Existing Roads

Roads within the Gateway West area include interstate highways, U.S. highways, state highways, county roads, as well as numerous rural roads. The Project area is primarily rural with the greatest densities of roads occurring near cities and towns. Existing road densities range from 1.3 to 2.2 miles per square mile. Major roads that parallel the proposed transmission line are of greatest interest for cumulative effects because of their linear nature and thus contribution to habitat fragmentation and their potential to inhibit movement by wildlife. Table 4.2-3 summarizes locations where existing interstate highways, U.S. highways, and state highways parallel the proposed transmission line ROW.

There are also numerous county and other rural roads within the Project area. A landscape connectivity analysis was conducted to meaningfully summarize the effects of existing roads on the landscape. Fragment sizes were assessed for habitats extending up to 4 miles from either side of the centerline of the Proposed Route and its alternatives. A detailed analysis, including a comparison of alternatives, is provided in Appendix D and discussed in Section 3.10 – General Wildlife and Fish.

Table 4.2-3. Locations Where Existing Major Roads (Interstate, U.S., and State Highways) Parallel Gateway West

Transmission Line Segment/Alternative	Mileposts Paralleled ^{1/}	Transmission Line Segment/Alternative	Mileposts Paralleled ^{1/}
Segment 1W(a)	43.9–57.7	Segment 7	66.7–70.2
Alternative 1W(a)-B	No Parallel Roads	Alternative 7A	No Parallel Roads
Segment 1W(c)	42.7–56.3	Alternative 7B	17.4–18.4, 30.6–35
Segment 2	25.6–42.5	Alternative 7C	No Parallel Roads
Alternative 2A	No Parallel Roads	Alternative 7D	1.5–2.7
Alternative 2B	No Parallel Roads	Alternative 7E	No Parallel Roads
Segment 3	31.3–45.9	Alternative 7F	No Parallel Roads
Segment 4	53.4–57.3, 191.3–197.4	Alternative 7G	No Parallel Roads
Alternative 4B	54.9–72.8	Alternative 7K	No Parallel Roads
Alternative 4C	54.9–72.8	Segment 8	57.4–59.4, 86.5–92.5
Alternative 4D	65.6–72.8	Alternative 8A	0–4.7
Alternative 4E	65.6–83.8	Alternative 8B	2.4–6.5, 39.9–45.7
Alternative 4F	0–5.9	Alternative 8C	3.3–6.4
Segment 5	No Parallel Roads	Alternative 8D	No Parallel Roads
Alternative 5A	No Parallel Roads	Alternative 8E	No Parallel Roads
Alternative 5B	No Parallel Roads	Segment 9	103.7–117.9, 137–152.7
Alternative 5C	0–6.3	Alternative 9A	No Parallel Roads
Alternative 5D	10.7–14.1	Alternative 9B	No Parallel Roads
Alternative 5E	No Parallel Roads	Alternative 9C	No Parallel Roads
Segment 6	No Parallel Roads	Alternative 9D	13.4–17.2
		Alternative 9F	8.3–12.9
		Alternative 9G	13.5–17.5
		Alternative 9H	8.3–12.9
		Alternative 9E (revised)	52.6–61.8
		Segment 10	15.2–20

4.2.1.4 Existing Power Generation Facilities

The generation of power is the first process in the delivery of electricity to consumers. Electricity is most often generated at a power station by electromechanical generators, primarily driven by heat engines. The combustion of fossil fuels (coal, natural gas, and petroleum) supplies most of the heat to these engines. Other sources of heat in the Project area include geothermal power. Electricity is also generated by harnessing the energy of flowing water (hydropower) and the wind. The following discussion describes the power generation facilities within Gateway West area.

Existing Coal-fired Power Plants

Coal-fired power plants generate energy through the combustion of coal, one of the major fossil fuels. These plants are designed on a large scale for continuous operation, and typically have a lifespan of 30 to 50 years. Byproducts of coal-fired power plants include waste heat; flue gas from fossil fuel combustion containing carbon dioxide and water vapor, as well as nitrogen, nitrous oxides, sulfur oxides, fly ash, mercury; and solid waste ash. Greenhouse gas and particulate emissions from coal-fired plants have been identified as major contributors to air pollution and acid rain, and have been linked to both human health issues and climate change.

For the cumulative effects analysis, coal-fired power plants must be considered for their impacts on air quality in the Project area. The Analysis Area for air quality includes the states of Idaho and Wyoming. There are 18 operating coal-fired power plants in the Analysis Area (3 in Idaho and 15 in Wyoming; see Table 4.2-4 and Figure E.24-3). The Amalgamated Sugar plants are located north of Segment 8 and south of Segment 7, respectively; the Don Plant is located north of Segment 5. Coal-fired plants closest to Gateway West in Wyoming include the Naughton, located along Segment 4; Jim Bridger, located 3 miles from the proposed Anticline Substation where Segment 3 terminates and Segment 4 begins; Johnston, where Segment 1W(c) begins, located 2 miles from the Windstar Substation where Segment 1W(a) begins; and the Green River plant, located south of Segment 3. The other plants in Wyoming are located northeast (in the Gillette area) or east of the Project area (Figure E.24-3, Appendix E). These plants have contributed to the existing air quality in the Analysis Area and will continue to do so as long as they operate.

Table 4.2-4. Existing Coal-Fired Power Plants in Idaho and Wyoming

Project	Proponent	Production Capacity	County Crossed by Gateway	General Location
Wyoming				
Dave Johnston	PacifiCorp	762 MW	Y	Converse County near Windstar Substation
Dry Fork Station	Basin Electric Power Cooperative	385 MW	N	Campbell (Gillette area)
Green River Wyoming	General Chemical Soda Ash Partners	30 MW	Y	Sweetwater County
Jim Bridger	PacifiCorp	2,120 MW	Y	Sweetwater County near Bridger 500-kW Substation

Table 4.2-4. Existing Coal-Fired Power Plants in Idaho and Wyoming (continued)

Project	Proponent	Production Capacity	County Crossed by Gateway	General Location
Laramie River	Basin Electric Power Coop	1,710 MW	N	Platte County
Naughton	PacifiCorp	700 MW	Y	Lincoln County near town of Kemmerer
Neil Simpson 1	Black Hills Power Inc.	22 MW	N	Campbell County
Neil Simpson 2	Black Hills Power Inc.	130 MW	N	Campbell County
Osage (BKH)	Black Hills Power Inc.	35 MW	N	Weston County
SF Phosphates Limited Co.	SF Phosphates, Ltd. Co.	12 MW	Y	Sweetwater County
Wygen I	Black Hills Wyoming, Inc.	80 MW	N	Campbell County
Wygen II	Cheyenne Light, Fuel & Power Co.	90 MW	N	Campbell County
Wygen III	Black Hills Generation, Inc.	110 MW	N	Campbell County
Wyodak	PacifiCorp	362 MW	N	Campbell County
Idaho				
Amalgamated Sugar – Nampa	Amalgamated Sugar Co.	9 MW	Y	Canyon County
Simplot Don Plant	Simplot Leasing Corp	16 MW	Y	Power County
Amalgamated Sugar Twin Falls	Amalgamated Sugar Co.	10 MW	Y	Twin Falls County

Source: WDEQ no date; Ventyx 2010; Platts 2009

Existing Oil-fired and Diesel-fired Power Plants

Power plants that burn oil (petroleum or diesel) to produce electricity are similar in general principle and operation to other fossil-fueled plants including coal-fired and natural gas-fired plants and are a minor component of power production in the Analysis Area. Oil or diesel is burned to produce steam to power a steam turbine and generator. Byproducts from combustion include carbon dioxide, water vapor, nitrogen, nitrous oxides, and sulfur oxides.

There are five existing oil- or diesel-fired power plants in the Analysis Area (Table 4.2-5). The closest is the Blacks Fork plant, located north of Segment 8. The other plants are located in the Idaho panhandle and the northwest corner of Wyoming, respectively.

Table 4.2-5. Existing Oil-Fired Power Plants in Idaho and Wyoming

Project	Proponent	Production Capacity	County Crossed by Gateway West	County
Wyoming				
Blacks Fork Gas Processing Plant	Questar Gas Management Co.	1 MW	N	Uinta
Grant Village	Clark Fork & Blackfoot, LLC	3 MW	N	Teton
Lake Diesel	Clark Fork & Blackfoot, LLC	3 MW	N	Teton
Old Faithful	Clark Fork & Blackfoot, LLC	2 MW	N	Teton
Idaho				
Salmon Diesel	Idaho Power	5 MW	N	Lemhi

Source: Ventyx 2010; Platts 2009

Existing Natural Gas-fired Power Plants

Natural gas-fired power plants are an important source of power generation in the Project area involving a process that begins with the extraction of natural gas, continues with its treatment and transport to the power plants, and ends with its combustion in boilers and turbines to generate electricity. By-products of natural gas-fired power plants include ethane, propane, butanes, pentanes and higher molecular weight hydrocarbons, elemental sulfur, and sometimes helium and nitrogen. However, compared to other fossil fuels such as petroleum and coal, natural gas is cleaner burning and produces less carbon dioxide per unit energy released (e.g., approximately 45 percent less carbon dioxide than coal-fired plants and 30 percent less than petroleum-fired plants for an equivalent amount of heat [EIA 1999]). There are 10 existing natural gas-fired power plants over 20 MW in size in the Analysis Area that are considered in relation to cumulative effects due to their impacts on existing air quality (4 in Idaho and 6 in Wyoming; see Table 4.2-6 and Figure E.24-3 in Appendix E). Several of these turbines serve dedicated industrial needs and do not supply electricity to the public.

Table 4.2-6. Existing Natural Gas-Fired Power Plants 20 MW or Larger in Idaho and Wyoming

Project	Proponent	Production Capacity	County Crossed by Gateway West	Location
Wyoming				
Anschutz Ranch East	BP American Production Company	51 MW	N	Uinta
Arvada	Basin Electric Power Cooperative	23 MW	N	Campbell
Barber Creek	Basin Electric Power Cooperative	23 MW	N	Campbell
Hartzog	Basin Electric Power Cooperative	23 MW	N	Campbell
La Barge	ExxonMobil Corporation	107 MW	Y	Lincoln
Neil Simpson Gas Turbine 2	Black Hills Power Inc.	40 MW	N	Campbell
Idaho				
Bennett Mountain	Idaho Power	173 MW	Y	Elmore
Mountain Home Generation Station	Idaho Power	270 MW	Y	Elmore
Rathdrum	Avista	166 MW	N	Kootenai
Rathdrum Power LLC	Rathdrum Power LLC	299 MW	N	Kootenai

Source: Ventyx 2010; Platts 2009

Existing Geothermal Facilities

Geothermal energy generation is the process of using the heat of the earth to produce useable energy. The geothermal plants in the Project area generate electricity, which requires water temperatures above 200°F. Wells are drilled into a geothermal reservoir which brings the geothermal water to the surface, where its heat energy is converted into electricity at a geothermal power plant. Geothermal power production requires the construction of large-scale power plants, which emit nitrous oxide, hydrogen sulfide, sulfur dioxide, particulate matter, and carbon dioxide, although these levels are low

relative to fossil fuel emissions (BLM 2008g). The expected lifespan of a geothermal plant is 20 to 30 years.

The first geothermal power plant in Wyoming came online in September 2008. The co-production, non-commercial demonstration project consists of a 250 kilowatt organic rankine cycle power unit. There are no commercial geothermal power plants in Wyoming (GEA 2009).

In January 2008, the first geothermal power plant began commercial operations in Idaho (Idaho Office of Energy Resources 2009). The Raft River Phase I geothermal project, owned and operated by U.S. Geothermal, is located in southern Idaho, approximately 200 miles southeast of Boise. The Raft River facility has a nameplate production capacity of 15.8 MW. Currently, net electrical power output is between 10.5 and 11.5 MW. This project is under a 20-year contract with Idaho Power (DOE 2009).

Existing Wind Energy Facilities

Wind energy facilities consist of a collection of turbines that are used for production of electric power. Turbines have power ratings ranging from 250 watts to 5 MW; however, most turbines in use at utility-scale facilities range from 700 kW to 3 MW. At utility-scale facilities, the turbines are interconnected by a communications network and a medium voltage (34.5-kV) collection system, typically buried underground, which carry power generated by the turbines to a substation. At the substation, this medium-voltage electrical current is increased in voltage with a transformer for connection to the high voltage transmission system which feeds into the existing grid. A large wind farm may consist of a few dozen to several hundred individual wind turbines, and cover an extended area of hundreds of square miles. Turbines can be added to an existing facility as electricity demand grows. Other components of wind energy facilities include a permanent system of access roads used for routine maintenance, operations and maintenance facilities, and a transmission line connecting the facility to the grid. Usually the existing land uses on site can be maintained during facility operation. The typical lifespan of a utility-scale wind energy facility is 20 to 30 years.

There are multiple wind energy facilities in Wyoming and Idaho ranging in capacity from 1.3 to 200 MW. Table 4.2-7 lists facilities 10 MW and higher, and Figure E.24-3, Appendix E, illustrates their locations.

Table 4.2-7. Existing Wind Energy Facilities 10 MW and Larger in Wyoming and Idaho

Project	Proponent	Production Capacity (MW)	Location
Idaho			
Bennett Creek Windfarm	Bennett Creek Windfarm LLC	21	Elmore
Burley Butte Wind Park	RP Wind ID LLC	20	Cassia
Camp Reed Wind Farm	RP Wind ID LLC	23	Elmore
Cassia Gulch Wind Park	Cassia Gulch Wind Park LLC	19	Twin Falls
Cassia Wind Farm	John Deere Wind	30	Twin Falls
Fossil Gulch Wind Park	Exergy Development Group, LLC / United Materials	11	Twin Falls
Golden Valley Wind Park	RP Wind ID LLC	12	Cassia
Goshen North Project	BP Wind Energy / Ridgeline	125	Bonneville

Table 4.2-7. Existing Wind Energy Facilities 10 MW and Larger in Wyoming and Idaho (continued)

Project	Proponent	Production Capacity (MW)	Location
Horse Butte Wind Project	Utah Associated Municipal Power Systems	58	Bonneville
Hot Springs Windfarm	Hot Springs Windfarm LLC	20	Elmore
Milner Dam Wind Farm	RP Wind ID LLC	20	Cassia
Mountain Home	John Deere Wind	42	Elmore
Oregon Trail Wind Park LLC (11 Wind Farms)	Reunion Power/Exergy Development Group, LLC	183	Twin Falls
Paynes Ferry Wind Park	RP Wind ID LLC	21	Gooding
Pilgrim Stage Station Wind Park	RP Wind ID LLC	11	Twin Falls
Power County Wind Park North	Power County Wind Park North LLC	23	Power
Power County Wind Park South	Power County Wind Park South LLC	23	Power
Rockland Wind Project	Ridgeline Power Services LLC	79	Power
Salmon Falls Wind Farm	RP Wind ID LLC	21	Twin Falls
Sawtooth Wind Farm	Powerworks Inc	22	Elmore
Thousand Springs Wind Park	RP Wind ID LLC	12	Twin Falls
Tuana Gulch Wind Park	RP Wind ID LLC	11	Twin Falls
Tuana Springs	John Deere Wind	17	Twin Falls
Wolverine Creek Energy	Inverergy	65	Bonneville
Yahoo Creek Wind Park	RP Wind ID LLC	21	Twin Falls
Wyoming			
Campbell Hill	Duke Energy North America	99	Natrona
Casper Wind Farm	Chevron Global Power	17	Natrona
Dunlap	PacifiCorp	111	Carbon
Foote Creek I	SeaWest Windfarms, Inc.	41	Carbon
Foote Creek III	SeaWest Windfarms, Inc.	25	Carbon
Foote Creek IV	SeaWest Windfarms, Inc.	17	Carbon
Glenrock Wind Energy Project	PacifiCorp	138	Converse
Happy Jack	Duke Energy North America	30	Laramie
High Plains Wind	PacifiCorp	99	Albany
McFadden Ridge Wind	PacifiCorp	29	Albany
Mountain Wind Energy Center I	Mountain Wind Power, LLC	61	Uinta
Mountain Wind Energy Center II (Bridger Butte)	Mountain Wind Power, LLC	80	Uinta
Reno Junction Wind Farm	Third Planet Windpower, LLC	200	Campbell
Rock Creek I (SEENGR)	SeaWest Energy Group, Inc.	50	Albany/Carbon
Rock River	Shell Wind Energy	50	Arlington/Carbon
Rolling Hills Wind	PacifiCorp	99	Converse
Seven Mile Hill Wind	PacifiCorp	119	Carbon
Silver Sage Windpower	Duke Energy North America	42	Laramie
Top of the World – GE	Duke Energy North America	99	Converse

Source: AWEA Archive 2010, Ventyx 2012

Wind energy projects have virtually no impact on air quality compared to conventional fossil fuel-power plants (natural gas, coal, and petroleum) because they emit no air pollutants or greenhouse gases; however, there are concerns over the noise produced by the rotor blades, visual impacts, and bird and bat mortality associated with collisions with rotors, as well as displacement of wildlife from habitats in the vicinity of the wind facility. Thus, they must be considered in relation to their contribution to cumulative effects to these resources.

Existing Hydroelectric Projects

Hydroelectric power generation is the process of using water’s energy as it flows from higher to lower elevation, rotating hydraulic turbines to create electricity. It is the most widely used form of renewable energy. Some hydroelectric projects are associated with reservoirs and generate energy by opening intake gates and allowing the water to flow through a pipeline that leads to the turbine. Projects that do not use reservoirs are called “run-of-river” projects because they rely on the normal river flow to generate energy. Energy generated at hydroelectric facilities is then transformed to a higher voltage and distributed via powerlines to the grid.

Once a hydroelectric project is constructed, the project produces no direct waste, and has a considerably lower output level of greenhouse gases than fossil fuel-powered energy plants. However, concerns associated with hydroelectric projects include blockage of fish passage, impacts to stream flow due to water diversion which can adversely affect aquatic and riparian habitats, impacts to water quality by lowering the amount of dissolved oxygen in the water, and increased sediment and nitrification in the reservoir behind the dam due to lack of water flow. In Idaho, most existing hydroelectric projects are located along the mainstem of the Snake River and its tributaries (Figure E.24-3, Appendix E; Table 4.2-8). In Wyoming, existing major hydroelectric projects are located along the Green, Shoshone, North Platte, and Wind Rivers.

Table 4.2-8. Existing Hydroelectric Projects 10 MW and Larger in Idaho and Wyoming

Project	Proponent	Production Capacity (MW)	Waterbody
Idaho			
Albeni Falls	USACE Portland District	42	Pend Oreille River
American Falls	Idaho Power	112	Snake River
Anderson Ranch	U.S. Bureau of Reclamation	40	South Fork, Boise River
Arrowrock	Arrowrock Hydroelectric Project	15	Boise River
Bear River Narrows	Twin Lakes Canal Co	11	Bear River
Black Canyon	U.S. Bureau of Reclamation	10	Payette River
Bliss	Idaho Power	81	Snake River
Brownlee	Idaho Power	744	Snake River
C.J. Strike	Idaho Power	94	Snake River
Cabinet Gorge	Avista	255	Clark Fork River
Cascade	Idaho Power	12	Payette River
Dworshak	USACE Northwestern Division	400	North Fork Clearwater River
Gem State	City of Idaho Falls	23	Snake River
Grace	PacifiCorp	33	Bear River

Table 4.2-8. Existing Hydroelectric Projects 10 MW and Larger in Idaho and Wyoming (continued)

Project	Proponent	Production Capacity (MW)	Waterbody
Hells Canyon	Idaho Power	392	Snake River
Lower and Upper Malad	Idaho Power	24	Malad River
Lower Salmon	Idaho Power	72	Snake River
Lucky Peak	Boise-Kuna Irrigation District	83	Boise River
Milner	Idaho Power	61	Snake River
Minidoka	U.S. Bureau of Reclamation	28	Snake River
Oneida	PacifiCorp	28	Bear River
Oxbow Dam	Idaho Power	220	Snake River
Palisades	U.S. Bureau of Reclamation	176	South Fork Snake River
Post Falls	Avista	18	Spokane River
Shoshone Falls	Idaho Power	78	Snake River
Smith Falls Hydroelectric Project	Eugene Water and Electric Board	20	Smith Creek, ID
Soda	PacifiCorp	15	Bear River
Swan Falls	Idaho Power	30	Snake River
Twin Falls	Idaho Power	53	Snake River
Upper Salmon Falls A	Idaho Power	18	Snake River
Upper Salmon Falls B	Idaho Power	17	Snake River
Wyoming			
Alcova	U.S. Bureau of Reclamation	41	North Platte River
Boysen	U.S. Bureau of Reclamation	17	Wind River
Buffalo Bill	U.S. Bureau of Reclamation	18	Shoshone River
Fontenelle	U.S. Bureau of Reclamation	11	Green River
Fremont Canyon	U.S. Bureau of Reclamation	67	North Platte
Glendo	U.S. Bureau of Reclamation	38	North Platte River
Kortes	U.S. Bureau of Reclamation	37	North Platte
Seminole	U.S. Bureau of Reclamation	52	North Platte

Source: Platts 2009; IPC 2011b; BOR 2011; Ventyx 2012

Existing Biomass and Cogeneration Facilities

Biomass is any organic non-fossil material of biological origin. Biomass can be utilized for the production of bio-fuels and bio-products, as well as the generation of alternative energy at biomass energy facilities. Biomass facilities can generate energy through the combustion of biomass and subsequent heating of boilers. Biomass energy production requires the burning of substances that can emit carbon dioxide and other air pollutants; however, when burned efficiently, biomass can be a cleaner burning fuel than petroleum or coal (WSFD 2007).

In general, biomass energy facilities consist of facilities whose sole purpose is the conversion of biomass to energy; however, some facilities can convert the biomass that is created as a byproduct of their primary function into energy (e.g., lumber mills that burn sawdust/wood-chips in a boiler). These types of facilities are referred to as cogeneration plants. Privately owned cogeneration plants can generate the electric power necessary to run the facilities' mills and factories, thereby reducing the facilities dependence on public utilities, or in some cases they can provide additional power to

the energy grid. Cogeneration facilities would have similar impacts on air quality as biomass facilities, but would have less impact on lands as these facilities are built within the footprint of existing buildings.

Biomass and cogeneration facilities are not common in Wyoming. Currently, the only facility in Wyoming consists of a demonstration project funded by the Western Governors’ Association and implemented by the Wyoming State Forestry Division at the Wyoming Honor Conservation Camp (located in Newcastle, Wyoming). This camp has been fitted with a wood boiler that heats the 7,500-square-foot Forestry Building and the 3,000-square-foot Department of Corrections building. This boiler replaced the propane heater that was originally used to heat the facility (WGA 2010). Information on the amount of energy generated at this facility is not available.

Biomass and cogeneration facilities are more common in Idaho than in Wyoming. There are 22 existing biomass and cogeneration facilities within Idaho, with power generated at these facilities ranging from 0.9 to 113 MW of energy (Crockett 2010; Huffman 2010; IOER 2009). The largest of these is the Potlatch Corporation facility (located in Lewiston and operated by Avista Corp), which currently generates 113 MW of energy (see Table 4.2-9).

Table 4.2-9. Existing Biomass and Cogeneration Projects 10 MW and Larger in Idaho

Project	Proponent	Production Capacity (MW)	Location
Don Plant - Phosphate Fertilizer	Idaho Power	16	Pocatello
Magic West - Glenss Ferry	Idaho Power	10	Elmore County
Potlatch Corporation	Avista Corp	113	Lewiston
Renewable Energy of Idaho	Idaho Power	18	Gem County
Rupert Cogen	Idaho Power	10	Minidoka County
Simplot Pocatello	Idaho Power	12	Power

Existing Solar Facilities

There are no existing solar facilities in Idaho or Wyoming.

4.2.1.5 Existing Resource Extraction Activities

Wyoming is the source of the majority of the nation’s coal and trona and a major source of crude oil, petroleum products, and natural gas. Idaho has some phosphate extraction activities but has very little coal and no trona mining. Figure E.24-4, Appendix E, illustrates the existing and proposed resource extraction activities in the vicinity of Gateway West, while Table 4.2-10 summarizes the existing resource extraction activities crossed by the Proposed and Alternative Routes by milepost. Proposed and Alternative Routes in the same row cross the same bed or mining area.

Oil and gas extraction, in addition to more recent coalbed methane extraction, has been a major industry in Wyoming for over 40 years. Figure E.24-4, Appendix E, shows the existing wells and oil and gas lease areas in Wyoming and Idaho (note that virtually all activity is in Wyoming). Table 4.2-11 summarizes the number of active and inactive (capped) oil and gas wells within 10 miles of Gateway West.

Table 4.2-10. Existing Non-Renewable Resource Extraction Activities

Proposed Route	Mileposts Crossed		Route Alternative	Mileposts Crossed		Route Alternative	Mileposts Crossed	
	Min.	Max.		Min.	Max.		Min.	Max.
Phosphate								
4	43.9	53.8	4F	2	2.2	–	–	–
	–	–	4B,C,D,E	2.2	11.4	–	–	–
Trona								
4	39.7	64.2	4F	0	12.6	4B,C,D,E	0	15.6
Coal								
2	1.9	23.3	–	–	–	–	–	–
	63.8	67.7	–	–	–	–	–	–
	76.1	81.1	–	–	–	–	–	–
	90.8	91.8	–	–	–	–	–	–
3	0.0	18	–	–	–	–	–	–
	4.3	42.4	–	–	–	–	–	–
3A	0	1.1	–	–	–	–	–	–
4	3.3	4.4	–	–	–	–	–	–
	7.3	13.6	–	–	–	–	–	–
	18.9	23.2	–	–	–	–	–	–
	93.8	97.5	–	–	–	4F	42.2	45.9
	–	–	4B, C, D, E	41.1	45	–	–	–
	–	–	4B, C, D, E	48	48.7	–	–	–

Source: BLM and Forest Service no date

Table 4.2-11. Oil and Gas Wells within 10 Miles of Gateway West

Segment	Active	Inactive	Total
1W	197	1,307	1,504
2	2,583	445	3,028
3	2,959	854	3,813
4	1,072	639	1,711

Source: Wyoming Oil and Gas Conservation Commission 2012

4.2.1.6 Existing Agricultural Areas, including Livestock Grazing, Cropland, and CAFOs

Please see Section 3.17 – Land Use and Recreation, and Section 3.18 – Agriculture, for details of these activities. Note that grazing on lands managed by the BLM and the Forest Service is controlled to maintain or improve existing watershed conditions.

4.2.1.7 Existing Residential, Commercial, and Industrial Developments

Please see Section 3.17 – Land Use and Recreation for details of these activities.

4.2.1.8 Existing Forest Activities

The Medicine Bow-Routt NFs would be crossed by Proposed Segment 1W, which is the BLM’s Preferred Route. The Caribou-Targhee NF would be crossed by the Segment 4 Proposed Route also (BLM Preferred). The Sawtooth NF would be crossed by Alternative 7K. These three NFs each produce a Schedule of Proposed Actions (SOPA) to alert interested parties regarding both short-term and long-term projects. These activities have in the past included road decommissioning, vegetation

management for weed control, habitat improvement, and for fuels management, salvage timber sales, and recreation trail maintenance.

The SOPA for the three NFs includes the following activities near the Project area. If carried out on schedule and as proposed, these activities would contribute to cumulative effects along with Gateway West. Other activities included in the SOPA that are not near the Project are not listed here.

The Forest Service is cooperating with the BLM to prepare EISs and supplemental EISs to incorporate greater sage-grouse conservation measures into Forest Plans (applies to the Medicine Bow-Routt, the Caribou-Targhee, and the Sawtooth NFs, among others) through plan amendments. Decisions and implementations anticipated in 2014.

Medicine Bow-Routt NFs, Douglas and Thunder Basin Ranger District

Segment 1, Proposed Routes 1W(a) and 1W(c).

Invasive Plant Management EIS for the Medicine Bow-Routt NFs and Thunder Basin National Grasslands. This proposal would continue an integrated approach to treatment of noxious weeds and invasive species, such as annual bromes, to manage critical wildlife habitats and fuels treatments on the Medicine Bow-Routt NFs and Thunder Basin National Grasslands. Decision and implementation are anticipated for 2014.

Caribou-Targhee NF, Montpelier Ranger District

Segment 4.

Active projects listed in the Caribou-Targhee SOPA for October 1, 2012²:

- **Cache Roads Hazardous Fuels Treatment:** Treat hazardous fuels within 100 feet of all open forest roads on the portion of Cache NF that is administered by the Caribou-Targhee NF. Smaller diameter conifer and dead and down fuels would be cut, piled, and burned to reduce hazardous fuels. Could affect 800 to 900 acres within 5 miles of the Gateway West project area. Planned for implementation in 2014.
- **Main Canyon Vegetation Management Project:** On hold. Proposed project would use prescribed fire and timber harvest to change species composition and structure on 3,600 acres in several different vegetation cover types in the Main Canyon area, which is on the west edge of the Forest near the Gateway West project area. No dates for decision or implementation are listed in the October 2012 SOPA.

Sawtooth NF, Minidoka Ranger District

None of the projects listed in the October 2012 SOPA for the Minidoka Ranger District are planned in or near the project area.³

² <http://www.fs.fed.us/sopa/components/reports/sopa-110415-2012-10.pdf>

³ <http://www.fs.fed.us/sopa/components/reports/sopa-110414-2012-10.pdf>

Kemmerer FO

The Kemmerer FO has identified two ongoing commercial timber projects (Oles 2012):

- **Tokewana Timber Sale:** In-progress timber sale harvest of mainly dead lodgepole pine (estimated through October 2013).
- **Van Tassel Post and Pole Sale Area:** In-progress designated area for the harvest of post- and pole-size lodgepole pine trees.

Conifer forests would be removed via right of way timber sale in areas where the Proposed Route and Route Alternatives cross these projects. No new proposed timber management areas would be crossed by the Project.

The Kemmerer FO is in the early stages of developing a Travel Management Plan for the Dempsey-Rock area and an Allotment Management Plan for the Slate Creek area. Both areas would be crossed by the Project.

Pocatello FO

The Pocatello FO also administers forested lands. Of the 105,119 acres of forested land within the Pocatello FO, the BLM has estimated that 27,028 acres are suitable for commercial management activities with no limiting factors, but considers the timber base to consist of 45,708 acres. The annual probable sale quantity for the planning area is 600 MBF based on the forest land base of 45,708 acres. According to the Final EIS for the Pocatello RMP (BLM 2010c), approximately a quarter of all Douglas-fir trees greater than 8 inches in diameter have died in the past 15 years as a result of bark beetles. Existing and additional mortality will increase the risk of catastrophic wildfire that threatens forest resources.

Although the Project crosses areas mapped as being suitable for commercial management activities, these mapped areas in many cases are based, according to the Pocatello BLM, on 50-year old stand inventories and have also been affected by bark beetle infestation, thus making them no longer representative of current commercial forest conditions. However, on the Pocatello FO there are two upcoming salvage sale areas, scheduled for 2012 (Swan 2012). One (Bear Hollow Units 1 & 2) is approximately 99.6 acres. Unit 1 (49.8 acres) is located approximately 0.3 mile north of Alternative 5B and 0.6 mile north of Alternative 7B. Unit 2 (also 49.8 acres) is crossed by Alternative 5B and is located approximately 0.25 mile north of Alternative 7B. Alternative 5B would impact 1.1 acres of Unit 2 and Alternative 7B would impact 0.8 acre. The other (Bull Canyon Road) is approximately 9.6 acres and is crossed by Alternatives 5A and 7A. Alternatives 5A and 7A would both impact 2.5 acres of the area. Given that under both alternatives less than 10 percent of the salvage sale would be impacted, there would be no appreciable reduction in the timber base. In addition, roads constructed by the Project (one would pass through the salvage sale area) would provide the BLM with access to these areas, which would off-set any loss of timber acreage.

The BLM has also identified four other potential areas in the Deep Creek Mountains where commercial forestry activities will be a future focus (Swan 2010). These are broad areas, ranging in size from roughly 4,950 acres to 10,320 acres and accessible by roads, in which commercial forest projects would be considered. Four transmission

line segments traverse these areas and would require clearing of conifer forest including the Segment 5 Proposed Route (13 acres cleared during construction), Alternative 5A (70 acres cleared during construction), Segment 7 Proposed Route (25 acres cleared during construction), and Alternative 7A (73 acres cleared during construction), including acreage disturbed for facilities as well as within the cleared ROW.

4.2.2 Reasonably Foreseeable Actions

This section lists activities that are known to the public through formal announcement and includes projects that have applied for a permit from a federal, state, or local agency. In some cases those projects are “on hold” and are not being actively pursued because of the economic downturn and financial uncertainty. However, if the project proponent has not withdrawn the application for a permit, those projects are still listed in this section and considered in this analysis.

Several commenters on the Draft EIS requested that the analysis of cumulative effects include possible future projects that might be facilitated if Gateway West were constructed. NEPA requires analysis of “reasonably foreseeable” future actions and does not require speculation about unknown future events. Therefore, this cumulative effects analysis is generally limited to projects with known locations and descriptions, usually those for which a permit application has been filed or other public announcement made with enough detail to allow for comparison provided. Section 4.2.2.5, Proposed Energy Generation Facilities, reports on two Wyoming studies that discuss possible future projects, commissioned by the WIA. These two studies were included because they represent a model of possible future scenarios.

4.2.2.1 Needed Studies to Support NEPA and Engineering Analysis

The Proponents of Gateway West requested permission from the BLM and the Forest Service to conduct geotechnical investigations on public lands and NFS lands. These studies are being conducted to assist the Proponents in designing the proposed Project. The Proponents have limited their studies to areas in Segments 1 through 4, where the Preferred Route is not subject to multi-agency controversy. These studies, while related to the design of the Project, are not connected actions to the larger Gateway West Project because they are conducted independently of the approval of Gateway West. They were therefore evaluated under a separate NEPA process and approved by the BLM Authorized Officer or the Forest Service Authorized Officer, depending on location.

Similarly, other construction projects, whether for pipelines, transmission lines, power plants, wind farms, and so on, would likely also request permission to conduct similar studies. The BMPs required for approval of these studies ensure that their impact on the environment is minimal and that, when taken together with the impact of other projects in the vicinity, would not contribute substantially to cumulative effects.

4.2.2.2 Proposed Transmission Lines

The PEIS for the WWE corridors anticipated the proposal and construction, not of individual projects, but of interstate electric transmission lines and natural gas and product pipelines in general (DOE and BLM 2008).

Where linear facilities are proposed that would cross federally managed lands, the environmental analysis for each project would determine areas of incompatibility with

underlying land management classifications. If the approval of the Project preceded those other facilities, and that approval included one or more land management plan amendments that changed management classifications, then additional projects could be permitted in that area without their own plan amendments. If approval of this Project were accompanied by a land management plan amendment that only allowed this Project to be constructed and operated but did not change the underlying land allocation, then approval of any additional project proposed for that land classification area would have to be accompanied by a project-specific analysis and land management plan amendment.

This section includes transmission lines that have been proposed but now are on hold awaiting a better economic climate. They are still being taken into account for cumulative effects, but are less certain to move forward than the projects being actively pursued. These “on-hold” projects are indicated by gray shading in Table 4.2-12, which summarizes the known proposed transmission lines. Figures E.24-1 and E.24-2 in Appendix E show where the proposed transmission lines would parallel the proposed Project. While it is unlikely that there would be sufficient generation or load to justify all the lines proposed, the BLM and the Forest Service must treat each complete application for a ROW equally, provided that it is submitted by a responsible, financially capable entity with demonstrated ability to complete the proposed project. Where additionally proposed transmission lines are inconsistent with the underlying land management plans, it is assumed for the purposes of this analysis that one or more plan amendments will be approved that would either allow the additional projects without changing underlying land allocations or would change those allocations in some areas. Therefore, and for the purposes of a cumulative impacts analysis, the agencies are assuming that all lines would be built and that all additional land management plan amendments would be approved to permit their construction and operations.

There are several lines that would parallel Gateway West for a substantial distance. Zephyr Power Transmission’s proposed Zephyr line would parallel Gateway West from Aeolus to the Idaho State line, a distance of approximately 268 miles. Lines that would parallel at least Segment 2 include Gateway South and Transwest Express. Mountain States Transmission Intertie (Northwestern Energy) is proposing to parallel Segment 6 and SWIP North would parallel or replace Segment 10. Table 4.2-12 shows proposed transmission lines that begin or end at substations used or constructed by Gateway West.

These transmission lines vary in voltage from 230 kV to 600 kV and may be AC or DC. Several are proposed by regulated utilities (those listed as Idaho Power or PacifiCorp proponents) while the remainder are proposed by unregulated, or “merchant,” transmission line ventures. Most are proposed with some version of a lattice tower for the 500-plus-kV lines and H-frame steel pole structure for the 230-kV lines. All propose ROWs at least 200 feet wide, with similar access roads, staging areas, fly yards, regeneration stations, and new or expanded substations as Gateway West.

Distribution lines are associated with various land uses and are considered as additional impacts for those land uses since they are not permitted or built separately.

Table 4.2-12. Proposed Transmission Lines

Name	Proponent	Voltage	Length (miles)	In-Service Date	Start	End	Parallels Gateway		Comment
							Segment	Mileposts	
Boardman to Hemingway	Idaho Power	500 kV AC	298	2014	Boardman Substation, OR	Hemingway Substation, ID	8	0	Arrives from northwest to Hemingway Substation.
							9		
							9	1-10	
Gateway South	PacifiCorp	500 kV AC	1,200	2017 – 2019	Aeolus Substation, WY	Clover Substation, UT	2	all	Depending on alternative chosen, the Gateway South line could parallel (but located about 5 miles south of) Segments 2 and 3 of Gateway West, between the Aeolus Substation and the area of Creston.
							3	1-5	
Hemingway to Captain Jack	PacifiCorp	500 kV AC	320	tentative	Hemingway Substation, ID	Captain Jack Substation, OR	8,9	0	Leaves from Hemingway towards Captain Jack near Malin, OR, on the CA border.
High Plains Express Transmission Project (HPX)	Trans-Elect Development Company; Western Area Power Administration; several others; and Wyoming Infrastructure Authority	500 kV AC	1,280	2017-2018	Windstar Substation, WY	Palo Verde, AZ			Leaves from Windstar, heads away from the Gateway West route immediately.
Mountain States Transmission Intertie (MSTI)	Northwestern Energy	500 kV AC	430	2013	Townsend Substation, MT	Midpoint Substation, ID	6	all	Preferred route parallels Borah to Midpoint.

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Table 4.2-12. Proposed Transmission Lines (continued)

Name	Proponent	Voltage	Length (miles)	In-Service Date	Start	End	Parallels Gateway		Comment
							Segment	Mileposts	
Southwest Intertie Project, north portion	Great Basin Transmission (subsidiary of LS Power)	500 kV AC or DC	515	2015	Midpoint Substation, ID	Southern NV	10	all	Major permits have been granted and construction is pending completion of commercial arrangements. Could affect lands in Segments 9 and 10.
TransWest Express Transmission Project (TWE)	Transwest Express, LLC, an affiliate of Anschutz Corporation	600 kV DC	725	2015	A new substation located near the town of Rawlins, WY	Las Vegas, NV	2	last half	Depending on alternative chosen, the TWE line could parallel Segments 2 and 3 of Gateway West, between the town of Rawlins and the Creston Substation.
							3	1-5	
Two Elk Transmission Project	PacifiCorp	230 kV AC	50	unknown	2 Elk #1 unit power plant	Windstar Substation, WY	1W	0	Comes into Windstar.
Wind Spirit transmission line project (WSP)	Grasslands Renewable Energy, LLC	Unknown	Uncertain	2017	Multiple substations in Montana, North Dakota, Alberta, and Saskatchewan	Medicine Bow, WY	1W	all	This project would collect and aggregate wind power from multiple points in the U.S. and Canada.
Zephyr Project	Zephyr Power Transmission	500 kV DC	850	2015	Aeolus Substation, WY	Las Vegas, NV	2	all	Route with new owners uncertain in Idaho. To be made public in 2013.

Note: Gray shading indicates projects proposed but on hold.

Sources: Information from Web sites for the following: Northwestern Energy, PacifiCorp, Great Basin Transmission LLC, TransWest Express LLC, Grasslands Renewable Energy LLC, LS Power, Wyoming Infrastructure Authority

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4.2.2.3 Proposed Pipelines

There is one large pipeline proposed in the vicinity of the Project area. It is a 30-inch-diameter natural gas pipeline owned and operated by the Anadarko Petroleum Corporation that runs north to south through the center of Wyoming from its northern border. This pipeline crosses the proposed transmission line in Segment 4 approximately between MPs 30 and 40, where it connects with an existing natural gas pipeline. Pipeline installation includes construction of access roads, ROW clearing, trenching, pipeline placement, construction and installation of compressor stations and metering stations, and site restoration.

Williams and TransCanada have proposed a large 42-inch natural gas pipeline in the Sunstone Pipeline Project application; the ROW has been filed with the BLM for an alignment that would closely parallel Gateway West along Alternatives 4B through 4E from Opal to the Wyoming border, then along Segments 4, 5, 6, and 8 from the Wyoming border to south of Hemingway. This project has been suspended as of April 2009.

4.2.2.4 Proposed Roads

For the purpose of this analysis, the Agencies assume that new roads would most likely be constructed in areas with high population density, or areas with projected increases in population growth. See the summary of residential development for additional discussion. Both the Idaho and Wyoming Departments of Transportation list future projects but none is listed for the analysis area. No additional new roads or major changes to existing roads have been proposed.

4.2.2.5 Proposed Energy Generation Facilities

This section includes facilities that have been proposed but now are on hold awaiting a better economic climate. These “on-hold” projects are indicated by gray shading in the tables. They are still being taken into account for cumulative effects, but are less certain to move forward than the projects being actively pursued.

Proposed Coal-fired Power Plants

There are three proposed coal-fired power plants in the Analysis Area, two in northeastern Wyoming and one near Medicine Bow (Table 4.2-13 and Figure E.24-3, Appendix E). Production capacities for these plants range from 325 MW up to 750 MW. These plants may have a lifespan of 50 years or more.

Table 4.2-13. Proposed Coal-Fired Power Plants in Idaho and Wyoming

Project	Proponent	Production Capacity	Location
Wyoming			
Two Elk I	Two Elk Power	325 MW	Campbell (north of Windstar)
Two Elk II	Two Elk Power	600–750 MW	Campbell (north of Windstar)
Medicine Bow CTL Facility	DKRW Energy, LLC, dba Medicine Bow Fuel and Power, LLC	650 MW, 20,000–22,000 barrels/day gasoline	10 miles southwest of Medicine Bow, Carbon County
Idaho			
None			

DKRW, doing business as Medicine Bow Fuel and Power, LLC, has proposed a coal-to-liquids plant near Elk Mountain (10 miles southwest of the town of Medicine Bow) in Carbon County, Wyoming. According to the proponents, “The project will use Carbon Basin coal optioned from our partner (and coal mine operator) Arch Coal to produce refined hydrocarbon liquid products that meet critical energy needs in an environmentally responsible manner. Initial commercial operation of up to a 20,000 - 22,000 barrels per day project is expected to start in 2014” (DKRW 2012).

The Wyoming Business Report reported on September 4, 2012, that “[t]he plant, potentially the first of its kind in the nation, would convert bituminous coal abundant in the area to low-sulfur gasoline at 11,600 barrels per day, a step down from the 20,000-plus barrels the company currently lists on its website” (Wyoming Business Report 2012).

The application for an Industrial Siting Council Permit, filed in 2007, states, “The CTL facility is approximately 200 acres and the coal-handling facility is approximately 205 acres for a total of 405 acres. During construction of the CTL facility, there will also be an equipment and construction laydown area north of the site that is approximately 338 acres. All of these parcels are on the permitted Arch Coal mine property (under the land quality mine permit) that has a total land area of 14,348 acres. The project site is at an elevation of 7,000 feet” (CH2M Hill 2007).

Proposed Oil-fired Power Plants

There are no known proposed oil-fired power plants in Idaho or Wyoming.

Proposed Natural Gas-fired Power Plants

There are three natural gas-fired power plants proposed within the Analysis Area, all of which are in Idaho (Table 4.2-14 and Figure E.24-3, Appendix E). The Gateway plant, proposed by Mountain View Power, Inc., is a 180-MW plant that would be located north of Segment 8 in Ada County. The Wendell Plant, proposed by the EnviroDyne Corporation, would be a 12-MW plant located along Segment 7 in Gooding County. The Langley Gulch Plant, operated by Idaho Power, is a 300-MW plant near New Plymouth in Payette County, located adjacent to the I-84 and US 30 interchange on the south side. Langley Gulch is already under construction and expected to be operational mid-2012. The installation of new natural gas energy generation facilities may require associated elements such as the construction and drilling of wells, access roads, pipelines, production facilities, and transmission lines to collect the natural gas from its source, transfer it to the production facility, and transmit power to the grid.

In 2010, ICF published Phase 2 of its wind energy study in Wyoming and examined the possible future need for additional natural gas power plants. This study is discussed below under Proposed Wind Energy Facilities.

Table 4.2-14. Proposed Natural Gas-Fired Power Plants in Idaho

Project	Proponent	Production Capacity	Location
Gateway	Mountain View Power Inc.	180 MW	Ada County
Wendell	EnviroDyne Corporation	12 MW	Gooding County
Langley Gulch	Idaho Power	300 MW	Payette County

Proposed Geothermal Facilities

Currently, there are no proposed geothermal facilities in Wyoming. According to the Idaho Office of Energy Resources, and referencing the Geothermal Energy Association, an expansion to the existing Raft River plant, as well four other projects around the state, is underway as of 2009 (GEA 2009). Three additional projects were proposed in 2010. These proposed geothermal projects are summarized in Table 4.2-15. In addition to these sites, there are more than 20 additional locations within Idaho are suitable for potential geothermal energy development and are currently undergoing testing (GEA 2009).

Table 4.2-15. Proposed Geothermal Projects in Idaho

Project	Proponent	Production Capacity	Phase of Development^{1/}	Location
China Cap	Idatherm LLC	50 MW	1	Caribou County
Crane Creek	Agua Caliente	175 MW	3	Washington County
Idaho Falls	Idatherm LLC	100 MW	1	Bingham and Bonneville County
Raft River Expansion	U.S. Geothermal	50 MW	3	Southern Cassia County
Willow Springs	Idatherm LLC	100 MW	1	Cassia County

1/ Development Phase: 1—Identifying site, secured rights to resource, initial exploration drilling; 2—Exploratory drilling and confirmation being done; Power Purchase Agreement (PPA) not secured; 3—Securing PPA and final permits; 4—Production Drilling Underway/Facility Under Construction.

The BLM and Forest Service prepared a joint PEIS to analyze the leasing of BLM-managed and NFS lands with moderate to high potential for geothermal resources in 11 western states. The ROD, signed in 2008 1) allocates BLM-managed lands as open to be considered for geothermal leasing or closed for geothermal leasing, and identifies those NFS lands that are legally open or closed to leasing; 2) develops a reasonably foreseeable development scenario that indicates a potential for 12,210 MW of electrical generating capacity from 244 power plants by 2025, plus additional direct uses of geothermal resources; and 3) adopts stipulations, BMPs, and procedures for geothermal leasing and development (BLM 2008g).

Proposed Wind Energy Facilities

Wind energy is one of the fastest growing energy sectors in the United States. There are 32 proposed wind energy facilities in Idaho, ranging in size from 5 to 10 MW to 450 MW (Table 4.2-16) located in the southern and eastern portions of the state (Figure E.24-3, Appendix E). There are also 7 proposed wind energy facilities in Wyoming (Table 4.2-16) located in the southern and eastern portions of the state (Figure E.24-3, Appendix E); the largest of which are the combined Sierra Madre and Chokecherry projects proposed by Anschutz in Carbon County (about 2,000 MW total) for which a ROD has been issued. Construction is scheduled to begin in 2013 and to continue in phases over several years. New wind projects will require clearing for turbine pads, access roads, and associated facilities.

Table 4.2-16. Proposed Wind Energy Facilities in Idaho and Wyoming

Project	Proponent	Production Capacity (MW)	Location
Idaho			
Black Canyon Rim	Black Canyon LLC	20	Bonneville
Cedar Creek Wind	Western Energy Corp.	228	Bingham
Cold Springs Windfarm	Aegis Renewables LLC	22	Elmore
Cotterel Mountains Wind	Windland, Inc.	195	Cassia
Cottonwood Wind Park	Cottonwood Wind Park LLC	20	Twin Falls
Deep Creek Wind	Deep Creek Wind Park LLC	20	Twin Falls
Desert Meadow Wind Farm	Aegis Renewables LLC	22	Elmore
Goshen South / Wolverine Canyon	Ridgeline Energy / BP Wind Energy	450	Bingham
Hammett Hill Windfarm	Aegis Renewables LLC	22	Elmore
High Mesa Wind Project	High Mesa Energy LLC	40	Gooding
Horse Butte Wind Project expansion	Utah Associated Municipal Power Systems	99	Bonneville
Lava Beds Wind Farm	Reunion Power LLC	18	Bingham
Magic Wind Park	Magic Wind Park, LLC	20	Twin Falls
Mainline Windfarm	Aegis Renewables LLC	22	Elmore
Meadow Creek Wind Project	Ridgeline Energy LLC	113	Bonneville
Notch Butte Wind Park LLC	Notch Butte Wind Park LLC	18	Lincoln
Rogerson Flats Wind Park	Rogerson Flats Wind Park LLC	20	Twin Falls
Ryegrass Windfarm	Aegis Renewables LLC	22	Elmore
Salmon Creek Wind Park	Salmon Creek Wind Park LLC	20	Twin Falls
Tumbleweed Wind Farm	Tumbleweed, LLC	up to 10	Elmore
Two Ponds Windfarm	Aegis Renewables LLC	22	Elmore
Wyoming			
Chokecherry and Sierra Madre Wind Project	Power Co. of Wyoming	2,000	Carbon
Converse County Wind	Clipper Windpower Inc.	2,000	Converse
Pathfinder Wind	Pathfinder Renewable Wind Energy, LLC	up to 3,000	Platte
Sand Hills Ranch Wind	Shell Wind Energy	50	Albany
White Mountain Wind	Teton Power, LLC	360	Sweetwater

Sources: AWEA no date; Ventyx 2012; WDEQ no date; Pathfinder Wind no date.

Transmission for Proposed Wind Energy Facilities

In 2010, ICF International published a report conducted for the Wyoming Infrastructure Authority called the Wyoming Collector and Transmission System Conceptual Design (ICF 2010b). This report considered two wind resource development scenarios—one that included wind resources west of the Laramie Range, and one that included wind resources primarily on the east side of the Laramie Range. The intent was to provide a conceptual design for up to 12 gigawatts (GW) of renewable capacity. The report concluded that it was conceptually feasible to provide for this capacity under both resource scenarios.

Since the ICF report was published, Governor Mead has published EO 2011-5 that replaces but does not substantially change EO 2010-4, an executive order published by his predecessor Governor Freudenthal, that in turn replaced the 2008 order. EO 2011-5 changed the boundaries of several of the Core Areas, and specified that wind development is not recommended in sage-grouse Core Areas. The second resource development scenario, with most wind development east of the Laramie Range, best matches the likely permissible pattern of wind development in Wyoming.

In Resource Scenario 2, the study further examined the likely development of both Wind Hubs and Transmission Export Hubs (TEHs) under three design scenarios:

- A radial feed design in which each wind hub would be connected by a transmission line to the nearest TEH, which would in turn carry the energy out of state;
- A design in which wind hubs are networked among themselves as well as to the nearest TEH; and
- A fully networked design including both the wind hubs and the TEH.

The conclusions drawn by this study were that development of the full capacity for wind generation would require between 1,709 and 2,039 miles of new high-voltage transmission lines (230 kV and above) to interconnect the wind energy to the TEH. While the number of projects currently in the permitting process or under construction represents only a small fraction of the total 12 GW of development potential, it is likely that, given the current demand for renewable energy by many states in the Western Interconnection, additional wind farms will be proposed and some of those will be permitted and built. Interconnecting those wind farms to the TEH will also be constrained by EO 2011-5 to existing corridors or to the designated 2-mile-wide corridors in sage-grouse Core Areas, possibly restricting the development of new wind generation in Wyoming.

The American Wind Energy Association (AWEA) reports that Wyoming currently has 1,101 MW of existing installed wind capacity, with an additional 311 MW under construction as of July 20, 2010 (AWEA 2010a). This represents about 12 percent of the estimated 12 GW renewable capacity in the state. AWEA also reports that development of wind energy in 2010 is likely to be much less than the record-setting 2009 year, due to the economic downturn, uncertainties in federal incentives, and the slowed development of new production facilities in the U.S. (AWEA 2010b). Because the report does not assume specific locations for any of the theoretical collection lines, and because future projects for which proposals have not yet been developed are speculative and not quantifiable, the possible cumulative impacts of full wind energy development, with its accompanying transmission interconnection system, are not analyzed here.

In a follow-up study, ICF was asked to map opportunities and constraints for possible future transmission corridors in the southeast portion of Wyoming. ICF states in that report (ICF 2010c): "The original objective for ICF's Task 1 (Energy Corridor Constraints and Opportunities) was to update Map 11 in the NationalGrid report. However, during the initial phase of completing this task, SEO and WIA adjusted the scope of this task to

focus on identifying opportunity and constraint criteria that could subsequently (outside of this study) be used to identify potential energy corridors in Wyoming. Therefore, rather than developing a map, the goal of this task was modified to developing an opportunity/constraint criteria table and environmental constraint protocol.”

The protocol was similar to that developed for siting the Gateway West transmission line, except that it did not take advantage of a LRT and used each constraint layer as static. It consisted of gathering data, putting it all into the same format and projection, overlaying the data, and interpreting the results to assign areas of high, medium, and low constraint for routing transmission lines. They further constrained their analysis to the southeastern counties of Wyoming and did not include the west half of Wyoming, where some of the largest constraints exist, including but not limited to sage-grouse habitat and important national historic resources.

The study was then used in response to a commission from the Western Area Power Administration to develop a map of constraints for transmission in that same southeast corner of Wyoming (ICF 2010d). These maps show areas of very high, high, medium, and low constraints for transmission line siting in several counties in the study area. Instructions to the contractors were changed after meetings with the WIA and Western Area Power Administration, and the final deliverables were five maps, each adding a layer of information to the last. The first map shows the areas of different levels of constraints but does not list those constraints.

Backup Energy for Firming Intermittency in Wind Generation

The WIA commissioned a study from ICF to better understand the likely alternatives and accompanying costs for “firming” wind energy (ICF 2010c). Because wind energy generation is intermittent, some additional source or generation or storage is needed to make the aggregate generation at least 99 percent reliable and to ensure that the total energy can be scheduled in advance with a high degree of reliability. This study looked at 10 scenarios that examined the need to firm up to 12 GW of Wyoming wind energy with up to 3 GW of either backup generation (e.g., natural gas) or energy storage (e.g., pumped water storage or compressed air storage). The intent of the study was to develop and display the range of capital costs associated with firming the wind energy potential in Wyoming.

In its study, ICF assumed either Wyoming or California natural gas-based generation, with variations based on location of natural gas storage for Scenarios 1-3 and assumed some form of electrical energy storage for Scenarios 4 and 5. In developing these scenarios, ICF stated:

... these scenarios do not cover all possible backup options, nor are the scenarios presented intended to predict, recommend, or influence the timing, location, or amount of wind energy backup that might be developed to firm wind resources in Wyoming.

Because these scenarios were developed to better understand the range of capital costs that firming might entail rather than to predict any one project, the cumulative effects of scenarios mentioned in this study cannot be realistically determined. However, pumped water storage is one of the methods contemplated for storage of electric energy, and there are six pumped water storage projects in early study stage in

Idaho and Wyoming. These projects are considered, to the extent their impacts can be determined, in this cumulative effects analysis.

Proposed Hydroelectric Projects

There are no conventional new hydroelectric projects proposed in the Analysis Area. However, there are five new pumped storage projects contemplated in Idaho and Wyoming.

Pumped Storage

Developers have proposed several pumped storage projects in Idaho and Wyoming. The intent of these projects is to provide firming capability to intermittent energy generation sources, principally wind. For example, Gridflex states, in its application for pre-permit approval for the Medicine Bow Pumped Storage Project:

The Project will be operated to provide support to new renewable resources being interconnected to the regional transmission grid currently and in the future. These resources—predominantly wind energy—are emissions-free and increase energy security, but are variable and intermittent in nature. The Project will use the dynamic capabilities of pumped storage to aid in the efficient integration of wind resources from both an operational and economic standpoint. (Gridflex Energy 2010)

According to FERC (2012):

Pumped-storage projects differ from conventional hydroelectric projects. They normally pump water from a lower reservoir to an upper reservoir when demand for electricity is low. Water is stored in an upper reservoir for release to generate power during periods of peak demand. For example, in the summer water is released during the day for generating power to satisfy the high demand for electricity for air conditioning. At night, when demand decreases, the water is pumped back to the upper reservoir for use the next day.

These projects are uniquely suited for generating power when demand for electricity is high and for supplying reserve capacity to complement the output of large fossil-fueled and nuclear steam-electric plants. Start-up of this type of project is almost immediate, thus serving peak demand for power better than fossil-fueled plants that require significantly more start-up time. Like conventional projects, they use falling water to generate power, but they use reversible turbines to pump the water back to the upper reservoir. This type of project is particularly effective at sites having high heads (large differences in elevation between the upper and lower reservoir).

In order to establish priority for desirable sites and to initiate the permitting process with the FERC, a pumped storage developer must first file a pre-permit application. Assuming the application is complete, FERC then issues a 3-year permit to complete studies and to submit a full license application. The studies include engineering and financial feasibility as well as environmental baseline studies. The FERC hydro licensing process takes at least 5 years, and construction, if permitted, would take another 3 years.

As of September 4, 2012, there was one pre-permit pending in Wyoming. It is a submittal made by Gridflex, LLC, on January 26, 2011, for the Black Canyon Pumped Storage Project (FERC docket 14087). It is proposed to use the existing Seminoe and Kortez reservoirs and to have a 700 MW capacity (FERC 2012b). Table 4.2-17 lists the pre-permit approvals as of June 7, 2011, in Idaho and Wyoming.

These projects are all in the early study stage. No project has yet filed an application for licensing with FERC. Their financial feasibility depends in large part on the development of sufficient wind energy in the vicinity to justify the substantial expense (\$1.5 to 2 billion) of the development (Energy Prospects West 2011). In the future they may proceed to the environmental study phase of a formal license application, in which case there will be enough information to better determine the cumulative effects.

Table 4.2-17. Pumped Storage Projects with 3-year Preliminary Permits Issued or Pending

Docket Number	Project Name	Licensee	Waterway	State	Authorized Capacity KW	Issue Date	Expiration Date
Pending							
13314	Corral Creek South Pumped Storage	Corral Creek South Hydro, LLC. (Riverbank Power, Inc.)	groundwater	ID	1,100,000	04/28/09	03/31/12
Issued							
13468	Champion Ridge	Champion Ridge Hydro, LLC (Riverbank Power)	groundwater, Johnson County	WY	700,000	12/07/09	11/30/12
13836	Medicine Bow Pumped Storage	Medicine Bow Hydro, LLC (Gridflex)	groundwater sources, the Medicine Bow River, or the Seminoe Reservoir	WY	400,000	12/03/10	11/30/13
13862	Deer Creek Pumped Storage	Deer Creek Hydro, LLC (Gridflex)	Deer Creek or groundwater sources	WY	650,000	03/28/11	02/28/14
14087	Black Canyon Pumped Storage	Black Canyon Hydro, LLC	Closed-loop	WY	700,000	7/15/11	6/30/14

Source: FERC 2012b

Proposed Biomass and Cogeneration Facilities

Biomass feasibility studies are currently being conducted in the western states (including Idaho and Wyoming), and multiple biomass and cogeneration projects are currently being considered. However, at this time, formally proposed projects are limited due to current economic feasibility. No projects have been formally proposed in Wyoming; however, eight projects have been proposed in Idaho, with estimated power production ranging from 1.2 to 13 MW. Only two projects are currently proposed that would generate at least 10 MW of energy: the Adams County Electrical Biomass Facility that would generate 10 to 13 MW of energy, and the Yellowstone Tower Combined

Heat and Power Plant that would generate 10 MW of energy (Crockett 2010; Huffman 2010).

Proposed Solar Facilities

Solar power generation is the process of converting solar energy into electricity. Multiple methods are used at existing solar facilities to convert solar energy to electricity, including photovoltaics (using semiconductors that exhibit the photovoltaic effect) and concentrated solar thermal (focusing solar energy to produce steam). Most utility-scale solar facilities in the U.S. are located in the southern portion of the country where solar light is more intense and the light regime is more predictable. Solar facilities have low impacts on air quality compared to conventional fossil fuel-power plants; however, due to the large area of ground disturbance associated with utility-scale solar facilities, they contribute to habitat loss and fragmentation. In addition, there is some concern regarding the impact that these facilities could have on avian species (due to burns or collisions with project mirrors); however, very little post-construction data are available regarding this potential effect.

There are no solar facilities proposed for construction in Wyoming. In Idaho, there are five proposed facilities, four approved and awaiting construction, and one still under consideration. Table 4.2-18 lists all of these projects. A fourth approved solar project anticipated to be online by July 2012 is located near Murphy in Owyhee County, constructed by Interconnect Solar Development LLC (20 MW; 125 acres).⁴ The Mid Point Energy facility, as currently proposed, would encompass about 405 acres of private land, consist of about 150,000 solar panels, and could generate 75 MW of energy (Magic Valley Times-News 2010; SIEDO 2010). In the 2 years since the initial announcement, no further progress has been documented and it is likely that the project is on hold.

Table 4.2-18. Proposed Solar Energy Facilities in Idaho

Project	Proponent	Production Capacity (MW)	Location
Tumbleweed Solar Farm	Tumbleweed LLC	5-10	Elmore
Grand View Solar PV 1	Simplot	20	Elmore
Grand View Solar PV 2	Simplot	20	Elmore
Murphy Flats Solar Power Project	Interconnect Solar Development LLC	20	Owyhee
Mid Point Energy Facility	Mid Point Energy	75	Jerome

Sources: Elmore County, 2011; Renewable Northwest Project.

4.2.2.6 Proposed Resource Extraction Activities

Proposed Oil and Gas Extraction

There are many thousands of acres of oil and gas leases that have not yet been fully developed. Oil and gas exploration, extraction, and development are likely to continue throughout the life of Gateway West. The intensity of development and the degree to which less productive fields are exploited are dependent on the international and domestic market for petroleum products as well as any government incentives (e.g.,

⁴ Idaho Public Utilities Commission, Case No. IPC-E-11-10, Order No. 32384, October 24, 2011 (accessed 1/9/2012).

depletion allowance) or disincentives (e.g., carbon tax). Although the leases are in place and development could technically take place at any time, the market drivers to exploit them are unknown now. Therefore, it is not possible to quantify the additional amount of environmental impact due to future oil and gas development. The existence of a robust electric grid will continue to support oil and gas extraction by providing the power for the extraction pumps.

Proposed Mining (Coal, Trona, Phosphate, Other)

Existing leases and mines are likely to continue to operate throughout the life of Gateway West. Existing mines that could expand include the Kemmerer coal mine, crossed by Alternatives 4B through 4E, and the FMC Green River trona mine, crossed by Segment 4 in the eastern portion of the segment where there are no Route Alternatives. The existence of a robust electric grid will continue to support mining activities by providing the power for them.

4.2.2.7 Proposed Residential, Commercial, and Industrial Developments

There are known proposed subdivisions for residential, commercial, and light industrial purposes in or near Segments 2, 3, 8, and 10. The largest area of potential future development near Gateway West in Idaho is in the area of Ada County south of Boise traversed by Segment 8, while a smaller area of subdivision and active development is occurring east of the city of Twin Falls in Idaho. In Wyoming, subdivisions are being platted and developed in the areas of Glenrock and Medicine Bow.

The potentially affected area south of Boise includes land that has been recently annexed by the city of Kuna to include the proposed Osprey Ridge development; however, the City had not received an application for development as of December 2012. Accordingly, exact details of this development are not available but Alternative 8B would cross approximately 6 miles of the city of Kuna, as well as 3 miles of its city impact area. This proposed development is discussed further in Section 3.17 – Land Use and Recreation, and shown in Figure 3.17-8.

4.2.2.8 Proposed New Forest Resource Activities

It is reasonable to expect that the Forest Service and the BLM will continue their programs of vegetation management for fire control, fuels management, habitat improvement, salvage timber harvest, and road maintenance and decommissioning (see Section 4.2.1.8 for Forest activities planned for execution within the next 2 years). However, no site-specific information on activities scheduled more than 2 years in the future was either found on the SOPA for the Medicine Bow-Routt, Caribou-Targhee, or Sawtooth NFs or available for the Kemmerer or Pocatello FOs.

4.3 Activities and Potential Shared Resource Impacts

Table 4.3-1 summarizes the resources with the potential for cumulative impacts from Gateway West when considered together with the listed types of activities. The construction of additional transmission lines, particularly those proposed to follow the same route with an approximate 1,500-foot offset from the proposed Project, are likely to have the potential for cumulative impacts for all resources analyzed in this document with the exception of environmental justice.

Table 4.3-1. Types of Activities and Areas of Shared Resource Impacts with Gateway West

Type of Activity	Resources Affected
Construction of other new transmission lines	Cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, soils, water, land use, agriculture, transportation, air quality, public safety, noise
Operation of existing and new transmission lines	Visual, vegetation, weeds, wildlife (avian), geologic hazards, soils, water, agriculture, EMF, public safety
Construction of New Pipeline	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, soils, water, land use, agriculture, transportation, public safety, noise
Operation of existing and new pipelines	Visual, vegetation, weeds, geologic hazards, soils, water, agriculture, public safety
Construction of new roads	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, geologic hazards, soils, water, land use, agriculture, transportation, air quality, public safety, noise
Maintenance and use of new and existing roads	Visual, weeds, wildlife, geologic hazards, soils (if unsurfaced), water, land use, agriculture, transportation, public safety
Construction of new fossil fuel power generation facilities	Soil, water, visual, cultural
Operation of existing fossil fuel power generation facilities	Air quality, water
Operation of existing hydroelectric facilities	Wildlife (aquatic species), water, public safety
Construction of new wind facilities	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, paleontological resources, geologic hazards, soils, water, land use, agriculture, transportation, air quality, noise
Operation of existing wind facilities	Visual, wildlife (avian species), land use, agriculture
Expansion of existing, opening of new mines	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, geologic hazards, soils, water, land use, agriculture, transportation, air quality, public safety, noise
Operation of existing mines	Visual, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, geologic hazards, soils, water, air quality, public safety, noise
Additional oil and gas extraction	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, geologic hazards, soils, water, land use, agriculture, transportation, air quality, public safety, noise
Operation of existing oil and gas wells	Vegetation, special-status plants and animals, weeds, wildlife, minerals, soils, water, land use, agriculture, public safety, noise
Expansion of residential development	Visual, cultural, socioeconomic, vegetation, special-status plants and animals, weeds, wetlands, wildlife, minerals, paleontological resources, geologic hazards, soils, water, land use, agriculture, transportation, air quality, public safety, noise
Ongoing forest management activities	Visual, vegetation, special-status plants, weeds, wetlands, wildlife, soils, water, air quality, public safety, noise

4.4 Cumulative Impact Analysis

4.4.1 Introduction

Note that each of the following resource areas has been analyzed in its respective section of Chapter 3. This analysis relies on the analysis of direct and indirect impacts from Gateway West, as proposed, and considers them in conjunction with the past, present, and reasonably foreseeable projects (listed in Section 4.3), to determine the cumulative impact of all projects taken together. It follows the same order of resources as found in Chapter 3.

4.4.2 No Action Alternative

Under the No Action Alternative, the BLM would not issue a ROW grant to the Proponents of Gateway West and the Project would not be constructed. No land management plans would be amended to allow for the construction of this Project. All of the activities indicated in Section 4.2.2 would likely continue—that is, new energy generation, including but not limited to wind farms, would be constructed; other transmission lines would be permitted and built; oil and gas extraction would continue and would expand geographically; coal, trona, phosphate, and other mines would continue to extract mineral resources and to expand geographically; residential, commercial, and industrial development projects in or near the Project study area would be implemented; and demand for electricity, especially for renewable energy, would continue to grow in the Proponents' service territories.

New generation sources in Wyoming currently in the queue for transmission on Gateway West, and those that otherwise would have also requested transmission service in the future, would have to find another means of transmitting their energy to market, but they would likely still be constructed. Other transmission lines currently proposed for construction may be permitted and constructed.

Domestic production of oil, gas, coal, and other mineral resources will likely continue and continue to expand where economically feasible (EIA 2010). Extraction facilities in Wyoming and Idaho are likely to continue and to expand.

Continued expansion of residential, commercial, and industrial developments is predicted by and planned for by various county and city comprehensive plans in the Project study area. While the current economic recession may slow or postpone these developments, there is no evidence or change in local regulation that would indicate that they will not eventually be constructed.

Demand for additional electricity in western cities would likely continue to grow, based on recent trends and continuing even with the current economic recession. The U.S. Energy Information Administration estimates demand for electricity will increase an average of 1.0 percent per year, or 25 percent from 2010 to 2035 (EIA 2010). They further state, "Generation from wind power increases from 1.3 percent of total generation in 2008 to 4.1 percent in 2035" in their base case analysis" (EIA 2010).

If Gateway West is not permitted, the demand for transmission services identified by the Proponents would not be met through this Project and the area would have to turn to other proposals to meet the transmission demand. These proposals, especially if

responding to interconnection requests from existing, under construction, and proposed wind farms in Wyoming, would likely also cross federally managed lands and would be subject to a similar permitting process as for Gateway West. If the same concerns that prohibited the permitting of the Project were to also stop the construction of these other transmission projects, the utilities responsible for meeting their service area demand might need to consider other options, either for permitting or for generation, to meet their consumers' demands. According to McBride et al. (2008), the lack of construction of these 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.

4.4.3 Visual Resources

The 10-mile-wide CIAA for visual resources includes a variety of landscapes such as mountainous areas, broad agricultural valleys, expanses of shrub steppe that have been or are still used for livestock grazing, areas of intensive mining, coal and gas development extraction and, for most of the Proposed Route and Route Alternatives, one or more existing transmission lines that occur within a half mile. Section 3.2 – Visual Resources discusses the direct and indirect effects of the Proposed Route and Route Alternatives on visual resources. The Proposed Route was designed to take advantage of existing utility corridors to minimize the introduction of a new transmission facility into a previously undisturbed landscape and reduce the visual impact on the landscape. Segment 9 is the longest exception to this general rule and the Proposed Route crosses areas without other major existing transmission lines for most of its length. However, even with careful siting and the implementation of additional mitigation measures required or recommended by the Agencies, the Proposed Route and Route Alternatives are expected to have a substantial adverse visual impact on the landscape in certain locations.

Within the CIAA, existing energy facilities and activities that define the character of the rural, but not primitive landscape include oil and gas extraction sites, open-pit mining sites, power generation facilities, wind and geothermal energy facilities, as well as transmission lines. New activities that would add to the industrial character of the landscape prevalent in Wyoming include the establishment of new energy and mineral extraction sites as well as construction of new transmission lines, pipelines, and other linear facilities. Most prominent of the new energy facilities would be the proposed wind energy facilities, given the strong vertical contrast of the turbines and blades (300 to 400 feet) against the generally flat to rolling terrain of the area.

Idaho landscape varies within the CIAA from mountainous terrain with agricultural valleys and scattered rural residences to expanses of sagebrush and grass rangelands south of the Snake River. Most of the Proposed Routes and Route Alternatives in Idaho west of the Deep Creek Mountains either travel through agricultural valleys associated with the Snake River plain, with some residential development or across the foothills to the north and south of the Snake River valleys. There is very little oil, gas, or other extractive industry in this area, and the landscape has a strongly agricultural or ranching character. Exceptions are found near urban expansion areas, south of Boise, north and south of Twin Falls, and to a lesser extent on the outskirts of smaller towns, where the landscape is developing suburban characteristics.

In the Windstar area, the combination of the Gateway West Segment 1W(a) new 230-kV line, the High Plains Express 500-kV line (presently on hold), the Wyoming-to-Colorado Intertie 345-kV line, and the Two Elk transmission line coming in from the north in conjunction with existing wind facilities and their transmission lines would substantially increase the industrial landscape surrounding the Dave Johnston Power Plant north of the river and north of I-25. South of the river and the interstate, the proposed Pioneer Wind Farm would add to the industrial nature of the landscape and would add cumulatively to the impact of Segment 1W.

EO 2011-5 delineates sage-grouse Core Areas and prescribes analysis methods and disturbance restrictions. It also designates two types of corridors in Wyoming and in sage-grouse Core Areas where Wyoming state agencies would be directed to find a proposed new transmission line siting in compliance with the EO. One type of corridor is 2,640 feet on either side of existing transmission 115 kV and larger in voltage, while the other type of corridor is 10,560 feet wide and designated by mapping through several Core Areas to allow for new transmission lines. The former corridor type would accommodate Segment 1W. Wind energy has been declared incompatible with sage-grouse Core Areas unless research can show that there would be no population decline from locating wind energy projects within Core Areas. It is unlikely that wind farms will be permitted under EO 2011-5 in Core Areas in the foreseeable future. There is no known proposed wind farm in the CIAA within Core Areas.

Because EO 2011-5 effectively ends new wind development on private and state lands within Core Areas, limits new transmission to the designated corridors, and may constrain what can be approved on federal lands (if the project needs approval from the state of Wyoming, as most energy projects do in some form), there are virtually no further opportunities for transmission lines within the designated corridors along the Segment 1W route.

From Aeolus to Creston along Segment 2, there is an existing 230-kV H-frame transmission line. In addition to that line and the proposed Gateway West double-circuit 500-kV towers and transmission line, three additional transmission lines have been proposed—Gateway South, TransWest Express, and Zephyr, all 500 kV. The additional proposed lines would be located at least 1,500 feet away and perhaps farther from Gateway West and the existing transmission line. Also in this area there is considerable existing and proposed oil and gas development and considerable potential wind development north and south of Rawlins. If all of these energy facilities were constructed, this industrial energy corridor could grow substantially in the CIAA.

Although this is an existing utility energy corridor, and the WWE corridor is designated north of the I-80/U.S. 30 freeway on federally managed lands, there are areas of concern, particularly the Fort Fred Steele area, where local residents have raised issues regarding the visual impact resulting from the proposed Project. If all the transmission lines were to be located south of the I-80/US 30 freeway, the visual impact to the Fort Steele community would be lessened. If all the proposed transmission lines, in addition to the existing transmission line, were located north of the freeway, the impact to the visual setting of the historic fort and the surrounding community could be substantial.

The Proposed Route for Segment 2 crosses the CDNST southwest of Rawlins. An existing 230-kV transmission line crosses the CDNST approximately one mile to the north, within the WWE corridor. The TransWest Express Transmission Line proposes to cross the CDNST near the Gateway West Project and the Zephyr Transmission Line may follow a similar path. In addition, the Gateway South Transmission Line proposes to cross the CDNST at a location south of these lines. If all of these lines are approved and built, they could have a substantial impact on the scenic values on and near the Trail.

The Wyoming Governor's EO 2011-5 has designated a 2-mile-wide corridor across a portion of the Hanna Core Area, and the WWE corridor also crosses the Hanna Core Area following existing transmission lines, allowing for an additional 1-mile-wide corridor under EO 2011-5. The proposed transmission lines, in addition to Gateway West, could all be accommodated in the EO 2011-5 corridors provided that minimum separation was still around 1,500 feet.

While Gateway South and TransWest Express would turn south near Creston, Zephyr would continue, probably following the route selected by the BLM for Gateway West, through Segments 3 and 4. There also appears to be potential wind development in both segments and extensive mining and oil and gas development in all of Segment 2 and the eastern part of Segment 4. In the vicinity of the town of Kemmerer there could be substantial development in addition to Gateway West, but the amount of existing development and expanse of the landscape should visually accommodate the existing and new development.

From Kemmerer west, it appears that in the foreseeable future Gateway West and another proposed transmission line would comprise the bulk of development and that adding two sets of structures to the existing two or three sets would create a major visual impact crossing historic trails, crossing the Bear River Valley near Cokeville and Montpelier, and crossing through the Caribou-Targhee NF.

The Wyoming Governor's EO 2011-5 has designated a 2-mile-wide corridor across the Sage Core Area, containing the three 345-kV transmission lines from the Jim Bridger Power Plant. The Proposed Route for Segment 4 is 1,500 feet to the northeast of the existing transmission line and would be considered consistent with EO 2011-5. There would be room in that corridor, assuming all are separated by 1,500 feet, for the additionally proposed transmission line.

In proceeding from Populus to Borah (Segment 5), the cumulative visual impact of the proposed corridor would involve six or seven lines exiting the Populus Substation, with four lines and three lines traversing south and west, respectively, of the Fort Hall Indian Reservation. In some locations this would result in a substantial visual impact. If two of the proposed lines traversed the reservation, it would substantially reduce the potential visual impact outside the reservation but would increase the impact within the reservation.

In Segment 6, Gateway West proposes very limited facilities outside the existing substations. The cumulative impact would result from construction and operations of the Zephyr project. However, the visual quality of the area is already defined in part by

existing transmission lines and though the new facilities would add to the impact, they would not change the local visual character.

For Segment 7, the proposed Gateway West single-circuit 500-kV line in conjunction with two or more additional transmission lines would create a new, wide corridor in an area that does not now have a major transmission corridor. The magnitude of the visual impact is partially reduced by the expanse of the landscape, the variety of the topography, the more developed nature of the area, and the proximity of one line to the next. In a single corridor, these three lines would have substantial visual impact, particularly in areas of residential development or developed recreation areas. In addition to the visual impact of the transmission lines, there are three existing wind farms (total of 60 MW) and nine proposed wind farms in the area, which would add cumulatively to the visual impact of the Project.

If Alternative 7K is chosen and a transmission corridor is developed along that route, impacts to historic trails and to some of the landscapes visible from the City of Rocks National Reserve would be substantial. See Figure E.2-30c in Appendix E for a simulation from KOP 1160 of the impact of Gateway West and three additional transmission lines, spaced 1,500 feet apart, south of the City of Rocks National Reserve. Similar to the Proposed Route, a major transmission corridor would be established in an area that does not now have any transmission lines. The visual impact would be greater than that of the comparison portion of the Proposed Route and additional transmission lines because of the undeveloped nature of the landscape along Alternative 7K and the presence of important historic resources for which setting is a crucial component.

From Midpoint to Hemingway (Segment 8), there are numerous existing transmission lines in a broad agricultural setting. For the Proposed Route, the addition of one set of 500-kV structures would not change the character of the area but could have a site-specific visual impact in agricultural or residential areas. There are no known future projects or actions that could add to the impacts of the Proposed Route. For Alternative 8B, the impact would be moderate to high because of the higher concentrations of residences. The cumulative visual impact of Alternative 8B when considered together with the likely continued development in that area would be substantial. The impacts of the Proposed and Alternative Routes given the present landscape and its activities are addressed in Section 3.2 – Visual Resources.

Segment 9 is proposed as a single-circuit 500-kV line with two major alternatives, one north and one south of the Proposed Route. The Proposed Route is largely in the WWE corridor across public lands. There are no known future projects or actions that could add to the visual impacts of this segment. The impacts of the Proposed and Alternative Routes given the present landscape and its activities are addressed in Section 3.2.

Segment 10 would include one set of single-circuit 500-kV structures next to an existing line and both may be paralleled by two future transmission lines. This would create a major corridor and change the local visual quality and may cause considerable visual impact particularly near the Snake River and I-80 crossings because these areas have the highest concentration of residences along this segment. The potential for two

additional future transmission projects in the CIAA along Segment 10 would further increase the likelihood of adverse impacts in the areas identified above, as well as in the area of the Minidoka National Historic Site.

4.4.4 Cultural Resources

In some areas, the construction of the Gateway West transmission line could lead to the establishment of a corridor in which other lines may be installed in the future. There is a potential that cumulative impacts to the visual settings for some cultural resources would occur due to the establishment of a corridor and the subsequent construction of additional transmission lines.

Gateway West could result in direct damage to historical or cultural NRHP-eligible properties such as prehistoric or historic archaeological sites, districts, buildings, trails, roads, and landscapes due to construction or other ground-disturbing activities. Other current and reasonably foreseeable activities with ground-disturbing activities (essentially all those listed in Section 4.2) have the potential for additional effects on these resources.

The Proponents of Gateway West have committed to avoiding historic properties eligible for listing, or listed, on the NRHP wherever feasible. The PA (Appendix N of this EIS) provides for site-specific treatment plans to be reviewed and approved by the BLM prior to issuance of a Notice to Proceed for that work element. Gateway West would introduce “visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features (36 CFR 800.5(a)(2)(v))” with regards to the setting for historic trails where the Project crosses those trails. This would be considered an adverse effect. The creation of a corridor would further increase the presence, from other projects, of similar elements that would further diminish the integrity of the property’s significant historic features. Some of the other proposed transmission lines have already requested to use some or all of the Gateway West segments or alternative routes (TransWest Express and Zephyr). The proposed transmission lines would require a federal ROW grant, thereby triggering consideration of effects to historic properties and mitigation of adverse effects under Section 106.

An indirect effect of Gateway West is that potential for increased access due to new access roads may encourage unauthorized site access, artifact collection, and vandalism. This is the case with all of the current and reasonably foreseeable projects that have new or improved access roads associated with them.

The Wyoming Governor’s EO 2011-5 has designated a 2-mile-wide corridor across the Sage Core Area, containing the three 345-kV transmission lines from the Jim Bridger Power Plant. The Proposed Route for Segment 4 is 1,500 feet to the northeast of the existing transmission lines and would be considered consistent with EO 2011-5. There would be room in that corridor, assuming all are separated by 1,500 feet, for the additionally proposed transmission lines. If all three transmission lines proposed for this area were to be placed in the same corridor, cumulative impacts of the Project to cultural resources, especially trails, when taken together with the other projects, would be substantial. The cumulative impact of multiple transmission lines would also vary by alternative in Segment 2 near the Fort Fred Steele State Historic Site (see discussion in Section 4.4.3, above).

Gateway West and the rest of the current and reasonably foreseeable actions would result in substantial cumulative adverse effects to known historic properties. All projects with a Section 106 nexus would complete surveys and record sites, contributing to the knowledge base in the CIAA. Each project also has the potential for inadvertent damage to previously undetected resources during construction, though all reasonable precautions would be built into each PA or MOA governing monitoring of and compliance with avoidance, minimization, and reporting requirements.

4.4.5 Socioeconomics

Within the Socioeconomic CIAA, past, present, and reasonably foreseeable activities that could combine with Gateway West and result in cumulative effects to the socioeconomic environment include projects with the potential to affect population, the economy and employment, housing, property values, education, public services, and tax revenues.

The effects from past and present activities are generally accounted for in the baseline socioeconomic environment characterized in Section 3.4.1. These past and present activities generally include construction and operation of existing transmission line and other linear projects, development and operation of energy generation projects, past and present oil and gas operations, and other residential and commercial development (see Section 4.2.1). Ongoing and reasonably foreseeable projects with the greatest potential to combine with the proposed Project and result in cumulative impacts include 1) current construction projects that would continue through 2015 and beyond, or 2) reasonably foreseeable actions that would be in construction between June 2015 and December 2021, when the majority of construction activities would occur on Gateway West. Cumulative effects on socioeconomic resources do not differ substantially by alternative.

Section 4.2.2 identifies a large number of reasonably foreseeable projects proposed within the Socioeconomic CIAA, including other transmission lines, pipelines, roads and highway improvement projects, and energy generation facilities. In cases where other construction activities coincide in space and time with Gateway West, there would be an increase in the projected influx of temporary workers and increased demand for temporary housing resources and other goods and services. Peak temporary population increases for Gateway West are expected to range from less than 0.1 percent to 3.1 percent of the existing populations for the affected counties. These potential impacts and associated cumulative effects would be short-term and temporary. Operation of the Project would require an estimated permanent staff of approximately 12 employees, all of whom are expected to be hired locally. As a result, Gateway West is not expected to result in any permanent changes in population and would have no effect on short- or long-term population trends.

Local Project-related expenditures, employment, and construction-related earnings from the Project would have a positive impact on the local economy and employment for the duration of construction. These impacts would be increased if ongoing and other reasonably foreseeable construction activities were to coincide in time with the proposed project. The resulting cumulative effects would be positive and short-term. Long-term economic impacts from the Project would be primarily associated with operation and maintenance-related expenditures on materials and supplies. These

impacts would be small, especially when compared to the construction-related impacts, and the incremental addition of these impacts to other ongoing and reasonably foreseeable projects would be relatively minor.

A temporary influx of construction workers associated with other ongoing and reasonably foreseeable construction projects that coincide in time with the Project, could result in shortages in housing for temporary construction workers in some locations depending on actual construction schedules (which would be affected by permitting processes, prevailing economic conditions, and the availability of construction contractors), as well as demand from other sectors of the economy, including the oil and gas and travel and tourism industries. This potential housing shortage could affect not only other project construction workers, but also local residents and visitors vying for the same facilities. In Wyoming, the ISC will require that other large projects also prepare and execute a housing plan designed to reduce adverse impacts on temporary housing availability, and large projects in Idaho are also likely to develop temporary housing plans to ensure that temporary accommodation is available for their workers. Construction-related cumulative impacts on housing would be short-term and temporary. The Project would require an estimated permanent staff of approximately 12 employees, all of whom are expected to be hired locally, and would not add cumulatively to long-term housing demand.

The temporary relocation of construction workers to the socioeconomic CIAA would create increased demand for community services such as education, medical facilities, municipal services, police, and fire. Other ongoing and reasonably foreseeable construction projects that coincide in time with the Project could add cumulatively to this demand. These potential cumulative effects would be short-term and temporary.

Construction of the Project would generate sales and use tax revenues through Project expenditures on construction supplies and equipment. Total construction-related sales and use taxes are estimated to be about \$62.9 million for Wyoming and \$39.5 million for Idaho. In Wyoming these estimated revenues would be divided between the state and county of origin and would be equivalent to about 7.3 percent of total state and local sales and use tax revenues in 2008 (Table 3.4-33). In Idaho, projected sales and use tax revenues would be equivalent to about 3.4 percent of the state total in 2011 (Table 3.4-34). Construction of the other reasonably foreseeable projects identified in Section 4.2.2 would likely result in similar short-term increases in tax revenues, depending on the size and nature of the project.

Following construction of the Project, projected ad valorem (property) tax revenues in Wyoming would range from 0.1 percent (Natrona County) to 4.5 percent (Carbon County) of total ad valorem tax revenues in the affected counties in 2011 (all taxing districts). In Idaho, projected property tax revenues would range from 0.2 percent (Ada County) to 39.8 percent (Owyhee County) of 2011 property tax revenues (County taxing district only). Operations of Gateway West would also generate sales and use tax revenues from local operation and maintenance expenditures. Other reasonably foreseeable projects, if constructed and not tax-exempt, would also result in increases in ad valorem and property tax revenues in the counties where they are located. Note that the State of Idaho limits the amount by which annual revenues from property tax

can increase in each county; with some exceptions this amount is limited to 3 percent based on the highest annual budget from the preceding 3 years (see Section 3.4.2.2).

The City of Kuna has developed estimates of the financial impact of Alternative 8B on the municipality based on a number of assumptions regarding mixed-use development that would otherwise occur within 660 feet of the centerline of the proposed transmission line. Kuna estimates that this foregone development, along with a 10 percent permanent reduction in value for potential development within 660 feet to 1,000 feet from the proposed centerline, would result in an annual loss of \$2.3 million in property tax revenues that would otherwise be generated over the next 15 years. They also assume additional losses of \$2.3 million annually from foregone permit and utility fees. They estimate that, combined, these potential reductions would result in a total loss over 15 years of \$69.7 million in foregone public revenues (City of Kuna 2009b). This assessment and the difficulties of projecting these types of impacts is discussed in more detail in Section 3.4 – Socioeconomics.

Details of the proposed development are not available, but City of Kuna planning documents anticipate that the city's population will more than double over the next 15 years, with a total population of 35,670 projected for 2025 and much of the expansion expected to occur in the area annexed to the south (see Figure 3.17-8). If this development were to occur, based on impact estimates provided by the City of Kuna, it would generate a substantial increase in ad valorem tax revenues for Kuna. The City of Kuna believes, as noted above, that Alternative 8B would result in a net reduction of these potential revenues. The actual extent of this potential impact is unknown but, based on the acreages Kuna assumes would be affected versus the total development, this reduction would be a relatively small share of the projected net increase that would result if this potential development were to take place.

4.4.6 Environmental Justice

Data compiled by the U.S. Census at the block group level indicate the potential presence of minority and low income communities in the vicinity of the Project. The Project is not expected to generate high or adverse human health or environmental effects on nearby communities. The Project would, however, have high, long-term visual impacts in some locations where the structures and overhead conductors would be visible from private residences, including parts of the Census Block Groups that have potential minority and low income communities. While these potential impacts exist, overall, the proposed Project does not appear to exhibit systematic bias toward placing the Project in minority or low income communities (see Section 3.5 – Environmental Justice). Cumulative effects on visual resources are discussed above in Section 4.4.3. Local construction expenditures for materials and supplies and spending by workers directly employed by the Project are expected to benefit local economies (see Section 3.4 – Socioeconomics).

4.4.7 Vegetation Communities

The major ecological changes to vegetation that have occurred, and that continue to occur in the CIAA due to past and present actions include changes in vegetation composition and conditions due to fire, grazing, mining, oil and gas development, agriculture, infrastructure development, and other forms of development. Of particular

concern is the continuing degradation of shrub-steppe habitat, primarily due to increased abundance and dominance of non-native species. Planned activities, including construction of infrastructure, mining, and expansion of residential development, would contribute to this overall loss of native vegetation, increase habitat for noxious weeds, and result in the potential loss of rare plant occurrences and habitat (see Sections 3.7 and 3.8). Grazing, which is prevalent in the Project area in Wyoming and parts of Idaho, may also affect vegetation by increasing habitat and distribution of noxious weeds and other non-native plants and by causing shifts in native species composition because of differential selection of food plants. These processes will continue into the foreseeable future.

Permanent vegetation removal and disturbance associated with Gateway West transmission line structures, access roads, and associated facilities under all alternatives would incrementally add to these effects. As noted below, mechanisms for weed distribution would be minimized by implementing mitigation measures listed in Section 3.6 – Vegetation Communities. However, unauthorized road use could introduce weeds outside the ROW. In addition, by providing increased access, project roads could contribute to the potential for OHV use. Off-road vehicle use could result in further degradation of native vegetation, which is compounded by the effects of habitat fragmentation (see Section 3.10 – General Wildlife and Fish for a discussion of fragmentation effects).

As documented for sage-grouse and other native habitat-dependent species (e.g., Connelly et al. 2004), there has been a massive reduction in native vegetation in Wyoming and Idaho over the last 200 years, and remnant patches of native vegetation are further threatened by invasive species, grazing pressure, and removal during construction and operation of resource extraction, mining, residential development, and energy infrastructure projects, including transmission lines. The cumulative impact of past and present land uses is considerable and has reduced the native vegetation types through which Gateway West would pass to small and often discontinuous patches. While the impact of the Project would be minor compared to the much larger past events, when taken together with various proposed developments as specified in Section 4.2, and when added to the impacts from past and present land use changes, the overall cumulative impact would be substantial.

4.4.8 Special Status Plants

Suitable habitat for sensitive plants occurs in Segment 4 (blowout penstemon, Ute ladies'-tresses) and Segments 1W and 2 (western prairie fringed orchid and Ute ladies'-tresses). There is also one known population of slickspot peppergrass within 0.5 mile of Segment 8 and Alternatives 8B and 8C. As for general vegetation (Section 4.4.7), past and present actions in the Project area have substantially reduced habitat for many plant species, including those mentioned. Planned projects within these segments of Gateway West include power generation facility development, three transmission lines, and ongoing nonrenewable resource extraction, all of which involve ground disturbance. Ground-disturbing activities have the potential to impact special status plant species either directly or by disturbing habitat. Projects on federal lands or requiring federal permits would be required to conduct preconstruction surveys to identify and avoid the locations of sensitive plant populations. However, projects not requiring federal permits

probably would not conduct surveys and might not avoid habitat or populations entirely. Transmission lines would typically avoid or span wetland and riparian habitats required by both orchid species but access roads could impact habitat, as could access roads for other new development activities. Slickspot peppergrass habitat would be surveyed and avoided for Gateway West and for other projects with a federal nexus.

Impacts to rare plants do not differ substantially by alternative in segments where rare plants or their habitats are present. Therefore, cumulative effects of Gateway West would not vary by alternative. Although the Project impact to rare plants would be minor due to survey and avoidance measures, its impacts when added to possibly substantial (but largely unknown) impacts from non-federally licensed activities on remnant habitat for these species could contribute to a substantial impact.

As noted in Section 3.7 – Special Status Plants, the western prairie fringed orchid may be affected by projects that require water depletions within the North Platte River drainage. Transmission lines would be designed to avoid or span wetland habitats, but access roads could have minor wetland impacts. Water depletions from Gateway West, if sourced from the North Platte River, could contribute to adverse effects to prairie fringed orchids within the watershed if combined with depletions from all other ground-disturbing activities requiring temporary dust control during construction. New water supplies for rural residential development could substantially contribute to water depletions. Water withdrawals from both the Platte River and Colorado River watersheds needed to control dust during construction for the Project and for all other probable future projects would not appreciably or noticeably change the water levels in either river downstream of the existing intakes for the municipal and agricultural water withdrawals from which these projects would purchase water. It is reasonable to expect that any activities requiring a federal permit would be required to fully mitigate any withdrawals, as would Gateway West, reducing cumulative impact to the sensitive plant species associated with riparian areas on the two rivers.

4.4.9 Invasive Plant Species

Noxious weeds and invasive non-native plant species are locally prevalent across the CIAA, but there are areas that are relatively weed-free or have only limited invasive species presence. With the EPMs, the potential spread of existing weed populations would likely be decreased. It is assumed that additional new construction activities would carry similar environmental protection requirements.

Within the CIAA, present activities that could also introduce or spread weeds include the operation, use, and maintenance of existing transmission lines, oil and natural gas pipelines, roads, existing oil and gas extraction activities. They also include livestock grazing, OHV access to native habitats (whether authorized or not), existing subdivisions and developments that are adjacent to native habitats, as well as the increased potential for wildland fires due to increased human activities. New activities that could add to the introduction or spread of weeds include the construction of new transmission lines, pipelines, energy and mineral extraction facilities, and power plants of all fuel sources; new or relocated grazing; and residential, commercial, and industrial development.

Existing and new operations on public lands would be accompanied by weed prevention and control measures as requirements for use of the public lands. The effectiveness of

those measures is greater where the activities are relatively short duration and are followed by required monitoring and mitigation activities if new weed populations are found. Measures are also effective for activities that require an operations and maintenance plan and adherence to its terms and conditions such as operations and maintenance of utility ROWs for transmission lines and pipelines, grazing on public lands, and operations and maintenance of oil, gas, and mineral extraction facilities.

Private landowners vary in the interest and emphasis they put on weed control on their lands and do not necessarily view introduced forage species as weeds. Noxious weeds that are poisonous or reduce the quality of rangeland are more likely to be targeted for control on private lands. Gateway West and other linear projects that cross private lands would be subject to landowner weed control requirements and would be subject to county and state weed control regulations where applicable. Introduction and spread of invasive plants are important regardless of land use, and therefore the impacts of Gateway West on invasive plants do not vary substantially by alternative. Cumulative effects on the introduction and spread of invasive plants do not differ substantially by alternative, except by length of alternative—longer routes have greater ground disturbance, more access roads, and therefore additional opportunity for introduction or spread of weeds. Given recent concern for introduction and spread of weeds on both public and private lands, and requirements for the prevention of introduction or spread of weeds imposed on all projects, the cumulative impact of reasonably foreseeable projects, including Gateway West, is not anticipated to be substantial.

4.4.10 Wetlands

Section 3.9 – Wetlands and Riparian Areas describes the locations of existing wetlands and riparian habitat in the CIAA. Past and planned activities in the CIAA that have likely affected, or have the potential to affect, wetlands and riparian areas include oil and gas extraction, mining, infrastructure development, and other types of development including grazing and residential development. Any of these types of land development in previously undeveloped areas typically result in an increase in impervious surface area and may lead to increases in erosion and sedimentation, which can have negative effects on wetlands and riparian areas. Alteration of water flow in wetlands, through increases in impervious surfaces or changes to the soils ability to hold water (by compaction), reduces the time that water resides in wetlands or streams in a watershed and can lead to greater flooding or more dry spells in streams. Grazing may also affect the physical structure of wetlands and riparian habitats in areas where cattle have direct access to streams. Grazing leases cover nearly the entire Project in Wyoming, and there are also leases and private land grazing along part of the route in Idaho.

Gateway West would result in a minor contribution to the amount of impervious surface in the Analysis Areas as a result of the installation of new structures and the surrounding compacted work area, and the maintenance of permanent access roads. Unpaved roads, when used over the long term, would compact soils and reduce their ability to hold water. In the past, many human activities have affected riparian vegetation and wetland areas. Streams in the Project area have been affected by diversions of water, dams, dikes, and development, including roads that have altered natural hydrologic functions. Grazing, agriculture, and development, including construction of roads, mines, and oil and gas extraction facilities, have altered or destroyed wetlands and riparian vegetation. More

recent development activities have been more carefully controlled, with limited impacts on wetlands and riparian vegetation due to requirements for compliance with the CWA. Gateway West, when taken together with other reasonably foreseeable proposed projects, would, in complying with their federal permits, avoid and minimize impacts to wetlands and riparian areas to the extent feasible and would provide compensatory mitigation where impacts were unavoidable. Cumulative effects for vegetative communities would not vary substantially by alternative except to the extent that the longer the alternative in native communities, the more impact it would have. If an alternative with larger impacts on native communities were chosen and additional transmission lines were also sited to follow that alternative, larger cumulative effects on native habitats would be expected. Therefore, given the minor individual impacts and the requirement for compensatory mitigation, Gateway West, when taken together with other projects that could adversely impact wetlands and riparian areas, would have a minor additional impact on these features.

4.4.11 General Wildlife and Fish

Construction of Gateway West would occur in areas that have already been altered by infrastructure development, natural resource extraction activities, and other development, all of which could adversely affect wildlife through direct mortality, disturbance, or habitat removal. Infrastructure development includes both linear (e.g., powerlines, major roads, railroads, and oil and gas pipelines) and non-linear (e.g., wind energy facilities, fossil fuel exploration and extraction, thermal-operated power plants, and geothermal developments) features. Linear features can result in irretrievable losses of habitat; habitat fragmentation and the creation of travel barriers; the spread of invasive species along access roads, ROWs, and disturbed areas; and the facilitation of mammalian predator movement along corridors. Powerline structures also provide perches and nesting substrates for raptors and ravens, thus potentially facilitating predation for some species (e.g., prairie dogs, grouse). The presence of major roads is associated with the increased risk of mortality from collisions with vehicles, an increased chance of poaching, and the increased risk of human-caused fires which can lead to the loss of sagebrush habitat and introduction of invasive species, including cheatgrass. Changes in habitat and other environmental variables such as noise resulting from human disturbance and presence may also influence wildlife behavior during key periods such as lekking, breeding and young rearing, and overwintering. Non-linear features can also disrupt wildlife behavior due to associated increases in human activities. The discovery and extraction of natural gas, oil, and minerals such as trona, coal, and phosphate has also resulted in direct loss of sagebrush habitat. Finally, grazing, farming, and other development (e.g., residential, commercial, and industrial), though limited in the Project area, has also caused direct loss of habitat as well as resulted in habitat fragmentation. While Gateway West, as well as other projects requiring federal permits, would be located to minimize impacts to important habitats and particularly to waterbodies, there would be an unavoidable long-term loss of habitat and fragmentation of habitat caused by these projects. When considered together with the massive habitat alteration already caused by past and present actions, the cumulative impact of Gateway West would be substantial.

4.4.11.1 Habitat

Existing past and present actions have substantially fragmented or occupied habitat, especially native shrub steppe and grasslands. Remnant patches of shrub and grassland

habitats are very important for the survival of many species of animals, including but not limited to migratory birds, large ungulates, small rodents and lagomorphs, mammalian and avian predators, reptiles, and, for riparian and wetland areas, amphibians and aquatic species including fish. The past and present activities that limit habitat quantity and quality for these species include identified ground-disturbing activities (Table 4.3-1). Reasonably foreseeable activities in addition to Gateway West would also continue to remove habitat and fragment remaining habitat patches with roads and other linear facilities. Because native habitats have been both eliminated and reduced in their function through introduction of invasive plant species and changes in fire regime, the additional removal and fragmentation of habitat due to Gateway West, when added to the already considerable impacts of past and present actions, would be substantial. Cumulative effects for habitat would not vary substantially by alternative except to the extent that the longer the alternative in native habitats, the more impact it would have. If an alternative with larger impacts on habitat were chosen and additional transmission lines were also sited to follow that alternative, larger cumulative effects on native habitats would be expected.

4.4.11.2 Big Game

The size and extent of big game herd units now present in the CIAA were influenced by past and present actions, including mining, oil and gas extraction, and grazing, as well as the systematic elimination of wolves and mountain lions. Although big game species are generally mobile and will move away from disturbance, the reduction in habitat availability and the prevalence of disturbances from roads and other developments has limited areas that can support big game, especially during critical times (crucial wintering and parturition). Therefore, disturbances during these times can have large adverse impacts on both individuals and entire herds. BLM and the state wildlife agencies have developed seasonal restrictions that are applied to all activities on federal and state lands (respectively) and would likely be applicable on private lands for projects subject to the WIA approval process. These seasonal restrictions would reduce the impact from construction noise and visual disruption during critical periods from any development project in the area.

Table 4.4-1 lists the past, present, and reasonably foreseeable actions within big game winter range units that are crossed by Gateway West. Effects would be greatest in small, isolated units if development precludes their use by big game. Such units occur along Segments 2, 3, 7, and 9. Most of the wintering and parturition habitat units crossed by Gateway West are large. Big game would be likely to continue to use these areas since the habitat loss associated with Gateway West and the other past, present, and reasonably foreseeable future actions would be relatively minor compared to the size of the big game habitat area and would be concentrated in areas of prior disturbance.

Because these limitations on activities would be imposed on Gateway West as well as on other transmission lines and pipelines, the additional cumulative impact on big game species from Gateway West activities during sensitive periods would be reduced to a minor level. There would still be the removal and fragmentation of habitat attributable to past, present, and reasonably foreseeable activities, to which even the minor impacts of Gateway West would contribute cumulatively to substantial adverse effects.

Table 4.4-1. Existing and Planned Actions within Big Game Wintering and Parturition Habitat Units Crossed by Gateway West

Species	Gateway West Segment/ Alternative	Approximate Gateway West Mileposts Crossed	Existing Projects within Big Game Habitat ^{1/}	Proposed Projects within Big Game Habitat ^{1,2/}
Winter Range Units				
Pronghorn	1W	3-8 (1W)	-transmission line	-transmission (HPE)
			-active oil and gas wells	-non-renewable resource extraction
			- I-25	-platted subdivisions
			-residential/commercial development	
Mule deer and elk (2 overlapping units)	1W	15-21 (1W)	-transmission line	
			-active oil and gas wells	
			-State Highway 253	
Pronghorn	1W	50-60 (1W)	-transmission line	
			-active oil and gas wells	
			-US 30, State Highway 77	
Mule deer and pronghorn (2 overlapping units)	1W, 2	68-72 (1W); 0-8 (2)	-transmission line	-transmission (GWS)
			-active oil and gas wells	-non-renewable resource extraction
				-wind energy (pending/authorized)
				-platted subdivisions
Mule deer and pronghorn (2 overlapping units)	2, 2A, 2B	28-42 (2); 11-14, 15.5-22.5 (2A); 0-3 (2B)	-transmission line	-transmission (ZE, TWE)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	
			- US 287	
Pronghorn	2	48-55	-transmission line	- transmission (ZE, TWE)
			- I-80	-non-renewable resource extraction
				-wind energy (pending)
Pronghorn	2	66.5-71	-transmission line	- transmission (ZE, TWE)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	
			-I-80	
Mule deer	3, 4, 4B-4E	19-45 (3); 0-1, 5-16, 20-21, 25.5-31.5, 52-58 (4); 1-5 (4B, C, D, E)	-transmission lines	-transmission (GS, ZE, TWE)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	-authorized wind
			- I-80, US 191, State Highway 377	-Jim Bridger expansion
			-existing residential/commercial (Green River, Rock Springs)	

Table 4.4-1. Existing and Planned Actions within Big Game Wintering and Parturition Habitat Units Crossed by Gateway West (continued)

Species	Gateway West Segment/ Alternative	Approximate Gateway West Mileposts Crossed	Existing Projects within Big Game Habitat ^{1/}	Proposed Projects within Big Game Habitat ^{1/,2/}
Pronghorn	4, 4B, 4C, 4D, 4E	85-87, (4), 15-23 (4B, C, D, E)	-transmission lines	-transmission (ZE, TWE)
			-active oil and gas wells	-non-renewable resource extraction
			-I-80, US 30, State Highway 530	
			-existing residential (Kemmerer)	
Moose, elk, mule deer (3 overlapping units)	4, 4B, 4C, 4D, 4E	110-125 (4); 64-72 (4B, 4D); 64-84 (4C, 4E)	-transmission lines	-transmission (ZE, TWE)
			-US 30	-non-renewable resource extraction
				-wind energy (pending)
Mule deer	4, 4B, 4C, 4D, 4E	132-148, 155-162, 170-173, 175-185, 187-195 (4); 82.5-85 (4A); 97-100 (4B, 4C, 4D, 4E)	-transmission lines	-transmission (ZE, TWE)
			-US 30	-non-renewable resource extraction
Elk	4	142-144, 159-161, 170-173, 179-180	-transmission line	-transmission (ZE, TWE)
			-US 30	-non-renewable resource extraction
Mule deer	5, 5C, 5E, 7	7-9 (5); 0-1 (5C); 7-8 (7)	-transmission lines	
Mule deer	5, 5A, 7, 7A	19-20 (5); 12-13 (5A); 19-21(7), 12-13)	-transmission lines	-transmission (NLI, ZE, TWE)
Mule deer	5, 7, 7A	24-25 (5), 23-25 (7A), 34-35(7)	-transmission lines	-transmission (ZE, TWE, LS)
Elk	5C	10-16	-transmission lines	
			-US 15	
Mule deer	7, 7G, 9	154-157 (7); 1-3 (7G); 0-9 (9)	-transmission line	-transmission (SWI)
				-wind energy (pending/authorized)
Mule deer	8, 8A	0-1 (8 and 8A)	-transmission line	
			-US 26	-Notch Butte wind park
Mule deer	8	24-25	-transmission lines	-transmission (NLI)
			-Interstate 86, State Highway 30	
Parturition Units				
Elk	4, 4F	109-119 (4); 58-60, 63-69 (4F)	-transmission lines	

1/ Non-renewable resource extraction includes coal, trona, and phosphate mining.

2/ Transmission lines: HPE (High Plains Express), ZE (Zephyr), TWE (Transwest Express), GS (Gateway South), SWI (Southwest Intertie)

4.4.11.3 Migratory Birds and Raptors

Effects of Gateway West on migratory birds would occur primarily during construction (see Section 3.10.2.2). Gateway West and all other projects, including but not limited to wind energy projects, oil and gas development, and timber harvest, are subject to the MBTA and would be expected to take appropriate precautions to avoid the take of individual birds or nests during construction. Preconstruction surveys would be required for Gateway West and avoidance of nests and nesting birds, including raptors, would be required during construction, with buffers on nests ranging from 10 meters for shrub-nesting species to up to a mile for sensitive raptor species. Projects with similar permitting structures would be expected to be similarly restricted, including wind energy projects, reducing the impact on nesting birds, including raptors, to a minor level even when taken together. Construction traffic would be limited to 25 miles per hour on unsurfaced roads for Gateway West and would likely be similarly limited for other projects, reducing the chances for direct mortality due to collisions with equipment and vehicles to a minor level.

The removal and fragmentation of habitat attributable to past, present, and reasonably foreseeable activities, to which even the minor impacts of Gateway West would contribute cumulatively, would result in some adverse cumulative effects to migratory birds and raptors. It is assumed that all new transmission lines, wind farms, and other projects with the potential to incur avian mortality due to collision or electrocution would develop Avian Protection Plans that would include measures to reduce the potential for raptor collisions and electrocutions.

Two hundred thirty (230)-kV and 500-kV transmission lines, such as those proposed by Gateway West and others, offer a negligible electrocution hazard to birds because the conductors are separated by much more than the wingspan of the largest bird. However, they can present a collision hazard for all types of birds. This hazard is relatively low when compared to buildings but higher than for other identified sources of collision (Erickson et al. 2005). Avian mortality was estimated in 1987 to be over 250 birds per mile of transmission line per year in the Netherlands (as quoted in Erickson et al. 2005 and Manville 2005). It is difficult to compare to wind turbine mortality, which has been estimated roughly at one to three birds per MW per year. For the 2,700 MW planned for wind farms for Wyoming, for example, that would represent a mortality of 2,700 to 8,100 birds per year from wind farms. Though no known monitoring at either wind farms or at transmission line locations is being conducted, it is reasonable to assume that additional transmission lines and additional wind farms will add to bird deaths from collision.

In addition to the electrocution and collision risk for raptors, the impacts to habitat and small mammal populations from Gateway West, together with past, present, and reasonably foreseeable activities, could potentially drastically reduce the prey base for raptors. Decreased prey for raptors would likely have direct and negative implications for the condition and trend of raptor populations. Additionally, the increased perching and nesting of raptors on transmission lines could lead to unsustainable levels of predation on small mammals, which could also decrease the raptors' prey base and therefore the raptor populations.

In April 2010, BLM signed an MOU with the USFWS regarding the management of public lands and the protection of migratory birds (BLM and USFWS 2010). BLM's obligations at a project level are to determine if the actions proposed in the project would have an adverse effect on migratory bird populations, habitats, ecological conditions, and/or significant bird conservation sites. Gateway West would not have a measurable adverse effect on non-special status migratory bird populations or significant bird conservation sites but would impact individuals and have an adverse effect on migratory bird habitats and ecological conditions through vegetation removal, fragmentation of native habitats, and possible increases in predation pressure due to adding perching substrate for avian predators and adding service roads sometimes used by canid predators. When taken together with the existing substantial habitat loss caused by past and present actions, including clearing for agriculture and development, fragmentation and habitat loss due to grazing, mining, logging, oil and gas production, road building, wildfires, and other energy infrastructure projects, as well as the potential future losses due to those same activities, the cumulative impact on migratory bird and raptor habitat and ecological conditions would be substantial.

4.4.11.4 Fish

The largest impact to fisheries from the construction of Gateway West was identified in Section 3.10 – General Wildlife and Fish as road crossings of watercourses—the greater the number of road crossings, the higher the potential for adverse impacts to fish resources. Assuming that parallel transmission lines would have similar access road densities, their potential impacts would add to those of Gateway West wherever they cross the same watercourse. While some access roads could be shared among projects, there would still be a substantial number of access roads, added to existing roads that would cross each waterbody. Gateway West, with established mitigation measures, would not introduce or spread aquatic invasive species and would therefore not contribute to the cumulative effect of the introduction or spread of aquatic invasive species.

Grazing can have negative effects on streambank condition, substrate embeddedness, pool frequency and quality, and riparian reserves due to bank damage caused by cattle, and trampling of riparian vegetation. This would be expected to continue under existing leases. Likewise, ground clearing for proposed projects can be a source of fine sediment and road crossings in general can present fish passage barriers. When features such as road are located near streams this can also reduce large wood debris recruitment and peak flows and drainage networks can be increased with the drainage from road surfaces. Requirements for limiting erosion, sedimentation, and in-water crossing work to non-critical seasons would reduce the impact of each of these projects on fish and other aquatic species. Cumulative impacts to fish would not vary substantially by alternative. Although Gateway West would implement mitigation measures for minimizing water quality effects and therefore would not contribute substantially to impacts on fish species, when considered together with the already considerable impacts of other past and present actions, the cumulative impact of Gateway West would be substantial.

4.4.12 Special Status Wildlife and Fish Species

The general discussion of conditions and potential impacts found within the General Wildlife and Fish section (Section 4.4.11) would be applicable to special status wildlife and fish species as well. The following discussion focuses on cumulative effects to particular special status wildlife and fish species.

4.4.12.1 Bald Eagle (*Forest Service and BLM Sensitive*)

Winter roost habitat for bald eagles is located within Segments 1W, 5, 8, 9, and 10. Nests have been identified along Segments 1W, 2, 4, and 5. Transmission lines are proposed for construction in these areas, in addition to Gateway West (see Table 4.2-12). The exact placement of some of these lines is uncertain because they are still in the planning stage; however, any newly constructed lines would likely be separated from existing transmission lines by at least 1,500 feet. If these lines were constructed in addition to the Project, there would be a small additional risk of disturbance to eagles and a small increased potential for collision with transmission lines during operation, though documented bald eagle collisions with transmission lines are not available for Wyoming or Idaho. Cumulative effects on the bald eagle would not differ substantially by alternative, except that some alternatives would impact considerably more habitat than others would. All projects, including but not limited to other transmission lines, would be sited to avoid nests and would be excluded from construction during nesting season near the nests. Implementation of each Proponent's Avian Protection Plan would reduce impacts to the bald eagle, including cumulative impacts, to a minor level.

4.4.12.2 Black-footed Ferret (*Endangered*)

Suitable habitat for black-footed ferrets occurs along Segments 1 and 2. Substantial habitat loss in these areas has already resulted from past and present actions including elimination of prairie-dog colonies by ranchers and construction and operation of existing pipelines, major roads, and transmission lines. Reasonably foreseeable actions that may result in additional losses of black-footed ferret habitat in the areas crossed by Gateway West include proposed transmission lines (see Table 4.2-12) as well as ongoing grazing and mining activities. The addition of transmission lines could provide new perching opportunities for raptors and ravens, thus increasing the potential for predation. This would be most likely to make a difference in predation levels within areas where existing transmission lines have not already provided multiple perching strata. The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species (see Sections 3.10 and 3.11). While the permanent loss of black-footed ferret habitat is anticipated to be minor under the Proposed Route and Route Alternatives, given its scope in relation to the habitat available, additional habitat loss associated with future projects may have a substantial cumulative effect on the future availability of suitable habitat for recolonization by black-footed ferrets. In addition, cumulative effects on the black-footed ferret would not differ substantially by alternative.

4.4.12.3 BLM / Forest Service Sensitive Fish Species

Streams that support 16 Forest Service or BLM sensitive fish species could be impacted by the Project. These include six trout taxa; three suckers, two sculpin, and five minnow species (including four chubs and one dace). The waterbodies and watersheds that

these fish could occur in, in relation to the Project, are discussed in Section 3.11 – Special Status Wildlife and Fish Species. The Project would both span stream habitats via the transmission line and cross these habitats with access roads. The Agencies have developed mitigation measures that would limit the impact of stream crossings by access roads, limit the risk of introducing aquatic invasive species into aquatic habitats, and establish requirements for water withdrawals in streams that contain sensitive fish to limit the risk of impingement.

Reasonably foreseeable actions that may result in additional impact to aquatic habitats include other linear projects that would span or cross waterbodies, projects that would require water withdrawals, or any project that could result in discharge or sediment loading to waterbodies. Cumulative effects on the sensitive fish species would not differ substantially by alternative, except that some alternatives would result in considerably more stream crossings (see Section 3.16 – Water Resources). As discussed in Section 4.4.11.4 for general fish species, although Gateway West would implement mitigation measures for minimizing water quality effects and therefore would not contribute substantially to impacts on fish species, when considered together with the already considerable impacts of other past and present actions, the cumulative impact of Gateway West would be substantial.

4.4.12.4 Burrowing Owl (*Forest Service and BLM Sensitive*)

Habitat for the burrowing owl occurs along all segments of Gateway West. Potential effects of Gateway West on the burrowing owl include direct mortality, disturbance, and loss or modification of habitat. On federally managed lands, preconstruction surveys would be required to avoid burrows. As with Gateway West, other planned transmission lines could provide new perching opportunities for raptors and ravens, thus increasing the potential for predation. This would be most likely to make a difference in predation levels within areas where existing transmission lines have not already provided multiple perching strata. The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from the Project (see Section 3.11 – Special Status Wildlife and Fish Species).

Cumulative effects on the burrowing owl do not differ substantially by alternative, except that some alternatives would impact considerably more habitat than others would. The cumulative effect on habitat for burrowing owls from past, present, and reasonably foreseeable future projects, including oil and gas development, wind development, and other transmission lines, could be substantial on private lands and would be considerable on federal lands even if burrows were not impacted.

4.4.12.5 Canada Lynx (*Threatened*)

The analysis of cumulative effects for lynx focuses on activities within designated LAUs, which are considered core habitat for the species, and on linkage habitat. No Project alternative crosses any critical habitat. Alternative 4F, not selected as part of the Preferred Route, would cross 4.5 miles of one LAU south of the mapped critical habitat in the Bridger-Teton NF on BLM-managed lands in the Kemmerer FO in Wyoming with less than half that amount of habitat loss. In the Kemmerer FO in Wyoming, the BLM's Preferred Route (Proposed Route) and all alternatives would cross designated linkage habitat near the Wyoming-Idaho border, and the BLM's Preferred Route where no

alternatives are present would cross designated linkage habitat just to the west of the Wyoming-Idaho border near Montpelier (see Figure E.11-1, Appendix E).

The amount of habitat loss across linkage habitat resulting from Gateway West would be very small, though it would be accompanied by habitat fragmentation, introduction of permanent service roads, and potential for additional access for OHV recreationists. Construction and operations of the Project are not expected to result in direct mortality or disturbance, or create travel barriers, due to the large home range occupied by this species to the north of the CIAA. In addition, the Project is not expected to impact the Canada lynx's prey base or result in long-term impedence to movement. There are no existing transmission lines in the vicinity of the proposed linkage habitat crossings, but one additional proposed transmission line, the Zephyr, may follow the Gateway West alignment through the linkage habitat.

Past resource management activities have limited the range of lynx and reduced its population. Though much of its habitat is now being managed for its recovery, the population has not yet recovered. The lynx habitat that would be crossed by Alternative 4F is in areas managed for lynx habitat and adjacent to non-habitat elements such as roads, open sage-brush (part is Core Area for sage-grouse), and a reservoir.

The Project is not expected to substantially impact the lynx's prey base or result in long-term impedence to movement. The only other known proposed project in this area, the Zephyr transmission line, would likely have similar effects upon lynx prey base and movement. The Project would not contribute substantially to a cumulatively adverse effect on the survival or recovery of the lynx population in the Project area.

4.4.12.6 Colorado and Platte River Fisheries (*Endangered*)

Five fish species are listed as endangered in areas located downstream of the Project (four in the Colorado River and one in the Platte River): Colorado pikeminnow, razorback sucker, humpback chub, bonytail, and pallid sturgeon. Project-related impacts that may affect local conditions (e.g., change in riparian habitat, sediment, accidental toxicant spills) would have no effect on these downstream habitats because the system where these species reside would be unchanged from local conditions. However, the Project would use an estimated 4,200 to 9,600 gallons of water per day for transmission line construction along all segments (see Section 3.16 – Water Resources). While no direct or adverse effects to any of these listed fish species would result from Project-related water use during construction, the tiered BOs of the USFWS on the Colorado River or Platte River system indicate that any depletion from the Colorado or Platte River systems would be considered to adversely affect these species (note that these two systems are covered under different plans and BOs). The Proponents intend to draw this water from existing developed water rights (i.e., purchasing existing water rights and only drawing water in accordance with these existing water rights); therefore, if the entirety of this water use were diverted from existing rights, with no water depletion, then the Project would have no effect on the aforementioned species. However, at this time it is uncertain if the Proponents would be able to purchase enough existing water rights to cover the Project's needs and, as such, all of the water withdrawal may not come from existing rights that were included in the programmatic BO consultation. If reasonable foreseeable future projects also require water withdrawals from these water systems, and cannot ensure that all of the

water would be derived from existing water rights, then the USFWS would consider this to be an adverse effect to downstream listed species as well. Therefore, the cumulative effects of water withdrawals from the Colorado and Platte Rivers from past, present, and reasonably foreseeable future projects could be substantial. It is reasonable to expect that any activities requiring a federal permit would be required to fully mitigate any withdrawals, as would Gateway West, thereby reducing impact to these species.

Because there is no Route Alternative that would completely avoid water withdrawals from these systems, the cumulative effects on downstream listed fish species would not differ substantially by alternative.

4.4.12.7 Columbian Sharp-tailed Grouse (*MIS, Forest Service Sensitive, BLM Special Status*)

Suitable habitat for Columbian sharp-tailed grouse occurs in Segments 4, 5, 6, 7, and 9. Gateway West was sited to avoid known leks by at least 0.25 mile. The Project would, however, contribute to the permanent loss of suitable habitat located near leks, and possible disturbances to birds located within these areas. Planned projects along Segments 4, 5, 7, and 9 include wind energy facilities, ongoing nonrenewable resource extraction, and transmission lines, all of which would, if constructed, permanently remove suitable Columbian sharp-tailed grouse habitat. The construction of additional transmission lines could provide new perching opportunities for raptors and ravens, thus increasing predation rates on the sharp-tailed grouse, however predation rates would most likely rise more sharply in areas where there are no existing transmission lines. The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from the Project (see Section 3.11 – Special Status Wildlife and Fish Species). Although the Project would be sited and constructed to minimize impact to Columbian sharp-tailed grouse, there would still be long-term loss and fragmentation of habitat associated with the Project. When added to the already considerable loss of habitat due to past and present activities, and the minor but cumulative impacts from proposed future projects, the cumulative effects on the Columbian sharp-tailed grouse from past, present, and reasonably foreseeable future projects would be substantial.

4.4.12.8 Columbia Spotted Frog / Northern Leopard Frog (*Candidate, Forest Service Sensitive / Forest Service Sensitive, BLM Special Status*)

The Columbia spotted frog and northern leopard frog may occur in wetland and riparian habitats found along Gateway West. Habitat for the northern leopard frog occurs along all segments of the Project. Habitat for the Columbia spotted frog occurs along Segments 4 and 9. The transmission line for the Project would span wetlands and riparian habitats (thereby minimizing impacts); however, some loss of or degradation to these habitats could occur due to construction and maintenance of access roads. There are additional transmission line projects that have been proposed for areas adjacent to the Project (see Table 4.2-12) with similar effects. Given that it is standard engineering practice for transmission lines to span riparian and wetland areas, and for such projects to include an SPCC Plan and SWPPP, it is assumed that removal of riparian habitat and sedimentation contributions to wetlands and waterbodies would be minimized by these additional projects as well. However, the cumulative loss or degradation of wetland and riparian habitats could be locally important for Columbia

spotted frogs and northern leopard frogs, given the limited availability of these habitats and their sensitivity to impacts.

Cumulative effects on the Columbia spotted frog and northern leopard frog would not differ substantially by alternative, except that some alternatives would impact different amounts of habitat than others would.

4.4.12.9 Federally Listed Invertebrate Species (*Threatened and Endangered*)

There are five federally listed and one delisted aquatic invertebrate species that occur near Gateway West: the Utah valvata snail (Endangered); Bliss Rapids snail (Threatened); Idaho springsnail (delisted); Banbury Springs limpet (Endangered); Snake River physa snail (Endangered); and Bruneau hot springsnail (Endangered). The designated recovery areas for some of these species (located along the Snake River) would be spanned by the Project's transmission line along Segments 8 and 10; however, no access roads would cross through these areas. Other proposed transmission lines (see Table 4.2-12) may cross through these areas. However, it is reasonable to expect that other transmission lines would span this habitat and would not build roads within this habitat. No other projects are known in the area that could adversely impact the Snake River habitat area. Therefore, no substantial adverse cumulative impacts are expected to federally listed invertebrate species, and cumulative effects on federally listed invertebrate species would not differ substantially by alternative.

4.4.12.10 Gray Wolf (*Forest Service Sensitive*)

Cumulative effects to gray wolves are assessed by comparing the known locations of wolf packs to proposed construction locations. There are multiple wolf packs in the vicinity of Gateway West (see Figure E.11-1, Appendix E). One pack is located northeast of Windstar and encompasses the first several miles of the various routes along Segment 1, including the Route Alternatives. Another large wolf pack area occupies much of central Natrona County. Much smaller packs are identified just north of the Creston Substation (Segments 2 and 3), at about MPs 70 to 80 along Segment 4, and south of Segment 4 and north of Alternatives 4B through 4E (near the town of Kemmerer, all in Wyoming). All known wolf packs in Idaho are north of the Project area. The cumulative effects of disturbance resulting from Gateway West and other existing or proposed activities would have negligible impacts to transient wolves given their broad habitat requirements and large home range. In addition, cumulative effects on wolves would not differ substantially by alternative.

4.4.12.11 Greater Sage-Grouse (*Candidate, MIS, Forest Service Sensitive, BLM Special Status*)

Habitat for the greater sage-grouse occurs along all segments of the Project. In addition, Wyoming-designated Core Areas would be crossed by Segments 1, 2, and 4, with amounts crossed and consistency with EO 2011-5 varying by alternative in these segments. Idaho-designated Key Habitat, as well as PGH and PPH, would be crossed by Segments 5, 7, 8, 9, and 10, with amounts crossed varying by alternative. The Proponents attempted to route the Project to avoid all leks by at least 0.25 mile (in accordance the BLM RMP requirements for "no surface occupancy," which were in place at the time of initial Project design in 2008). However, the centerline of the

Project would come within 0.25 mile of a lek with an “undetermined” activity status along Segment 10. In addition, leks were avoided to the extent possible by 0.6 mile, based on the assumption made at the time of initial Project design (2008) that the “no surface occupancy” requirement would increase from 0.25 mile to 0.6 mile (as of this date, the BLM “no surface occupancy” restriction has been increased to 0.6 mile). However, not all leks could be avoided by this distance (see Table 3.11-3 in Section 3.11) due to the need to avoid other sensitive resources (e.g., high-altitude mountain habitats that contain species listed under the ESA, or sensitive cultural resources that are protected under the NHPA).

The Project would contribute to the permanent loss of suitable sage-grouse habitat and possible disturbances to birds. The Project design includes minimization measures such as seasonal restrictions on construction, and mitigation measures such as offsite compensatory mitigation. The Agencies assume that similar measures would be proposed by or imposed upon other projects proposed in the area. For example, proponents of the Chokecherry and Sierra Madre Wind Farm, Power Company of Wyoming, LLC, entered into a Candidate Conservation Agreement with Assurances with the USFWS that includes ongoing monitoring of a 26,000-acre conservation easement on checkerboard private lands leased by the Proponent, and various conservation measures on private property, including fence-marking and water development. The Wind Farm POD’s Appendix N does not specify land ownership for the various measures, but the area is in checkerboard ownership and some measures may apply regardless of underlying ownership. In addition, as was discussed for other species that are preyed upon by raptors and ravens, the construction of additional transmission lines could provide new perching opportunities for raptors and ravens, thus increasing the potential for predation rates on the sage-grouse. This would be most likely to occur within areas where there are no existing transmission lines.

Sage-grouse are dependent on large areas of intact sagebrush habitats. They can utilize a variety of sagebrush types including big sagebrush communities consisting of *Artemisia tridentata* ssp. *wyomingensis* (Wyoming big sagebrush), *A. t.* ssp. *vaseyana* (mountain big sagebrush), or *A. t. tridentata* (basin big sagebrush), as well as low forms of sagebrush such as *A. arbuscula* and *A. nova*. Although sagebrush is one of the most widespread vegetation types in the intermountain lowlands of the western United States, it is also one of the most imperiled ecosystems in North America (USFWS 2010e). The decline in sagebrush habitats has resulted from a variety of factors including direct loss of habitat, alterations to regional fire regimes, increased grazing by herbivores, invasion of exotic species, and a lack of successful rehabilitation of impacted area with native shrubland species (Wisdom et al. 2002; Knick et al. 2011). As sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats, a decline in these habitats can have adverse impacts on the distribution of sage-grouse. For example, sage-grouse were once thought to occur in Arizona, California, Colorado, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming in the United States, as well as Alberta, British Columbia, and Saskatchewan in Canada; however, they no longer occur in Nebraska, Arizona, or British Columbia, and their abundance has been in decline in some of the remaining areas (USFWS 2010e).

Estimates regarding the extent of suitable sage-grouse habitats that existed prior to the European colonization of North America are uncertain; however, some studies have placed the estimate at approximately 296,645,809 acres (USFWS 2010e). However, recent studies estimated that the current distribution of sage-grouse encompasses only 165,168,202 acres (i.e., a 56 percent reduction since the 18th/19th century; Connelly et al. 2004; USFWS 2010e). Much of this habitat loss is directly related to agricultural use, with estimates ranging from approximately 56,834,237 acres to 61,500,000 acres of sagebrush habitats that have been converted to agricultural uses within the sage-grouse conservation area (Connelly et al. 2004; USFWS 2010e; Knick et al. 2011). More than 617,763 acres of former sagebrush are now covered by interstate highways and paved roads (Knick et al. 2011). In addition, oil and gas developments influence approximately 8 percent of sagebrush habitats (Knick et al. 2011). Due to differences in the ecology of sagebrush communities within the range of the sage-grouse, seven distinct sage-grouse Management Zones (MZ) have been mapped by WAFWA. Gateway West crosses through two of these MZ: MZ II, which includes the Wyoming Basin floristic region, and MZ IV, which includes the Snake River Plain floristic region. Based on current estimates, there are approximately 26,877,899 acres of sagebrush habitats currently in MZ II and 33,158,329 acres of sagebrush habitats in MZ IV (Knick in press, as cited in USFWS 2010e). Estimates of sagebrush levels prior to the 18th/19th century (i.e., before European colonization) within these two MZ are not currently available.

Direct loss of habitat (i.e., conversion of sagebrush habitats to other land-uses) is not the only factor that has contributed to the decline of sagebrush habitats in the western states. For example, very little of the remaining sage-grouse habitats are currently undisturbed or have been unaltered from sedimentation occurring prior to European colonization. Two of the most substantial factors that have affected the quality and composition of existing sagebrush habitats (beyond direct removal and conversion) are 1) changes that have occurred to the fire regime in the western states, and 2) grazing of sagebrush habitats by domestic herds (discussed in more detail below).

Fire has been identified by many as a prime factor associated with the decline of sage-grouse (USFWS 2010e). Sagebrush habitats within the range of the sage-grouse are not fire dependent or adapted to intense/frequent fires (unlike the chaparral-shrub communities on the western coast; Regan et al. 2010), and natural fire return intervals in these areas are thought to have been around 50 to 350 years in length (Backer in press, as cited in USFWS 2010e). Recently, however, fire return intervals have become shorter (i.e., fires are more frequent), due in part to the expanding urban-wildland interface as well as impacts associated with global climate change. For example, wildfires burned a combined total of approximately 21,500,000 acres of sagebrush within the seven MZ mapped by the WAFWA between 1980 and 2007; and there has been an increasing trend in the total area burned since 2007 (Baker et al. in press and Miller et al. in press, as cited in USFWS 2010e). Idaho has been particularly hard-hit by recent fire events. Approximately 30 to 40 percent of sagebrush habitats in southern Idaho were burned during 1997 to 2001 (Healy 2001 as cited in USFWS 2010e), and an additional 660,000 acres of sagebrush burned between 2003 and 2007 (or approximately 7 percent of the remaining sagebrush habitat in Idaho; USFWS 2010e). Due to recent drought conditions, multiple large-scale fires burned though Idaho and

Wyoming during the 2012 fire season (the extent of which is still being determined). Table D.6-7 in Appendix D lists the known/recorded wildfires that have occurred within the Project area since 2008, as well as the estimated area that each fire burned. The increased frequency and intensity of fires in recent years has adversely affected sagebrush communities by removing habitat and increasing the rate of invasion by exotic plant species (e.g., *Bromus tectorum* and *Taeniatherum asperum*). Furthermore, as these sagebrush communities are not fire adapted, it can take 20 to 150 years for burnt communities to return to conditions that can support nesting sage-grouse (USFWS 2010e).

Although grazing occurred prior to European colonization (i.e., in the form of grazing by native herbivores such as deer, bison, and other ungulates), it is likely that grazing pressures were not as intense historically compared to current conditions/land uses. Native herbivores were likely present in lower numbers compared to current domesticated herds; therefore, historic grazing pressures were likely sporadic and localized (Miller et al. 1994, as cited in USFWS 2010e). Limited grazing (such as natural grazing levels resulting from native herbivores) can have beneficial effects to sagebrush communities, such as preventing the encroachment of woodland vegetation into shrublands. However, intense grazing pressures (such as those resulting from domesticated herds) can adversely affect sage-grouse nesting and brood-rearing habitat by decreasing shrub cover (thereby decreasing opportunities for sage-grouse to hide from predators), compacting soils, decreasing herbaceous abundance, increasing erosion, and increasing the rate of invasion by exotic plant species (USFWS 2010e). Although there is little evidence that can be used to directly link modern grazing practices to population level responses by sage-grouse, modern grazing practices have been shown to have detrimental effects to sage-grouse habitats, as described above (Braun 1987 as well as Connelly and Braun 1997, as cited in USFWS 2010e). Calculating the direct effects of grazing (i.e., quantitative values) on sage-grouse or their habitats is not possible based on current data (Knick et al. 2011); however, approximately 12,000,000 AUMs (i.e., the amount of forage necessary to support one livestock unit per month) is permitted for livestock grazing on public lands in the western states (Knick et al. 2011). Table 3.18-3 in Section 3.18 – Agriculture lists the BLM grazing allotments that are located within the Project area.

The historic levels of sagebrush within the Project area are unknown. However, certain assumptions about historic levels can be made by looking at the current land-uses in this area. Based on the known distribution of sagebrush habitats in this area (i.e., sagebrush is the most common habitat type crossed by the Project), and the suitability of sagebrush areas for developed into agricultural uses compared to other landscape types present in the Project area (e.g., forested areas), it can be assumed that much of the agricultural and urban development within the Project area likely once contained sagebrush habitats. When considering an 18-kilometer (11-mile) Analysis Area around the BLM's Preferred Route (i.e., 9 kilometers [5.5 miles] on either side of the Project), approximately 57 percent of the Analysis Area contains sagebrush (3,943,931 acres), 14 percent is currently utilized as agricultural lands (976,891 acres), 2 percent is used exclusively as grazing/pasture lands (139,899 acres), and 2 percent currently contains urban or other anthropogenic developments (147,778 acres). The BLM's Preferred

Route would impact approximately 11,177 acres of sagebrush habitats within the range of the sage-grouse (see Section 3.11 – Special Status Fish and Wildlife Species).

Table 4.4-2 lists the existing and proposed activities within designated Core, Key, PPH, and PGH Areas (see Section 3.11 for a definition of these areas). Additional transmission projects, located outside of Key/Core PPH/PGH Areas, are listed in Table 4.2-12. Habitat for these species would also be impacted by non-linear projects such as ongoing oil and gas extraction, ongoing grazing and OHV use, and wind energy development. Losses of birds would also continue to occur due to hunting, illegal poaching, and the spread of diseases such as West Nile Virus. The cumulative effects of the Project on the greater sage-grouse when taken together with past, present, and reasonably foreseeable future projects would be substantial.

Wyoming’s Governor Mead has published EO-2011-5, which replaces but does not substantially change EO 2010-4, an executive order published by his predecessor Governor Freudenthal, which established boundaries of several of the Core Areas. EO 2011-5 also designated two types of corridors in Wyoming and in sage-grouse Core Areas where Wyoming state agencies would be directed to find a proposed new transmission line siting in compliance with the EO. One type of corridor is 2,640 feet on either side of existing transmission 115 kV and larger in voltage, while the other type of corridor is 10,560 feet wide and designated by mapping through several Core Areas to allow for new transmission lines. Wind energy has been declared incompatible with sage-grouse Core Areas unless research can show that there would be no population decline from locating wind energy projects within Core Areas. It is unlikely that wind farms will be permitted under EO 2011-5 in Core Areas in the foreseeable future. There is no known proposed wind farm in the CIAA within Core Areas.

Because EO 2011-5 effectively ends new wind development on private and state lands within Core Areas, limits new transmission to the designated corridors, and may constrain what can be approved on federal lands (if the project needs approval from the state of Wyoming, as most energy projects do in some form), it is unlikely that additional development would occur in Core Areas in Wyoming outside designated corridors as long as the EO is in place.

Table 4.4-2. Existing and Proposed Activities within Sage-Grouse Key/Core PPH/PGH Habitat Units

Sage-Grouse Core/Key Units Identified by Gateway Segments	Approximate Gateway Mileposts	Existing Projects within Core/Key PPH/PGH Sage-Grouse Habitat ^{1/}	Proposed Projects within Core/Key PPH/PGH Habitat Unit ^{1/,2/}	Relationship to Gateway Project
1W(a)	19-22, 35-49	<ul style="list-style-type: none"> • WWE transmission line corridor • State Highway 253, State Highway 91, Rock Creek and Fort Fetterman Road • Existing Dave Johnston to Difficulty transmission line (to be reconstructed as Segment 1W(c)) 	Wind lease, two authorized, and segment proposed	Segment 1W would closely parallel existing transmission line.
1W(c)	29-44, 70-71			

Table 4.4-2. Existing and Proposed Activities within Sage-Grouse Key/Core Habitat PPH/PGH Units (continued)

Sage-Grouse Core/Key Units Identified by Gateway Segments	Approximate Gateway Mileposts	Existing Projects within Core/Key Sage-Grouse Habitat ^{1/}	Proposed Projects within Core/Key Habitat Unit ^{1/,2/}	Relationship to Gateway Project
2 Alternative 2B, Alternative 2A	0-34, 65-81	<ul style="list-style-type: none"> • One transmission line 	Transmission	Segment 2 would closely parallel the existing transmission line and pipelines for full length and US 287 for approximately 10 miles; other proposed transmission lines are planned to parallel the Gateway West alignment.
	0-17	<ul style="list-style-type: none"> • Two large-diameter natural gas pipelines 	Multiple proposed (GS, ZE, TWE, NOI)	
		<ul style="list-style-type: none"> • US 287, State Highway 72, I-80, US 30, railroad 	Nonrenewable resource extraction	
		<ul style="list-style-type: none"> • WWE corridor • Active oil and gas development • Nonrenewable resource extraction • One product pipeline 	Multiple proposed wind leases	
4	32-45, 54-55, 58-67, 136-137, 141-150	<ul style="list-style-type: none"> • Transmission line 	Transmission (ZE, TWP)	Segment 4 would follow Governor's corridor, parallel existing transmission line and one pipeline.
		<ul style="list-style-type: none"> • Three large-diameter pipelines • US 91 • Nonrenewable resource extraction 	Non-renewable resource extraction	
4 4F 4B, C, D, E	53-70	<ul style="list-style-type: none"> • One pipeline 	Transmission (ZE, TWP)	Segment 4 would follow Governor's corridor, parallel pipeline for approximately 10 miles and State Highway 372 for approximately 5 miles.
	0-17	<ul style="list-style-type: none"> • State Highway 372, US 30 • Dense active oil and gas development • Nonrenewable resource extraction 	Nonrenewable resource extraction	
	0-15			
4 4F 4B, C, D, E	103-120	<ul style="list-style-type: none"> • Three transmission lines 	Transmission (ZE, TWP)	Segment 4 would follow Governor's corridor, parallel one transmission line and the pipeline; Alternatives 4B, 4C, 4D, and 4E would parallel US 30.
	50-72	<ul style="list-style-type: none"> • One large diameter pipeline • US 30, US 182 • Active oil and gas development • Nonrenewable resource extraction 	Nonrenewable resource extraction	
	32-40, 50-80			
4 4B, C, D, E	130-135, 138-143	<ul style="list-style-type: none"> • Two transmission lines 	Transmission (ZE, TWP)	Segment 4 would follow Governor's corridor, closely parallel one transmission line and US 30.
	92-95, 99-100	<ul style="list-style-type: none"> • One large diameter pipeline • US 30 	Nonrenewable resource extraction	

Table 4.4-2. Existing and Proposed Activities within Sage-Grouse Key/Core PPH/PGH Habitat Units (continued)

Sage-Grouse Core/Key Units Identified by Gateway Segments	Approximate Gateway Mileposts	Existing Projects within Core/Key Sage-Grouse Habitat ^{1/}	Proposed Projects within Core/Key Habitat Unit ^{1/,2/}	Relationship to Gateway Project
7	75-85	<ul style="list-style-type: none"> Two large-diameter pipelines (Williams and Chevron) 	None	Gateway West would parallel and cross these existing pipelines.
7, 9	115-120 (7), 0-19 (9)	<ul style="list-style-type: none"> Several small BLM-approved wind energy leases 	Transmission (SWI) Several small pending BLM wind energy leases	Gateway West would result in new development along the northern edge of the polygon.
8	32-35, 47-50	<ul style="list-style-type: none"> Two existing transmission lines 	Several small pending BLM wind energy leases	Gateway West would parallel transmission lines along southern edge of habitat polygon.

1/ Non-renewable resource extraction includes coal, trona, and phosphate mining.

2/ Transmission lines: HPE (High Plains Express), ZE (Zephyr), TWE (Transwest Express), GS (Gateway South), SWI (Southwest Intertie)

Because the greater sage-grouse may avoid areas that contain tall structures, the cumulative effects on this species may differ depending on which alternative is selected. If an additional proposed transmission line is co-located with Gateway West, the effects of habitat displacement on grouse species by these various lines (resulting from the presence of tall structures) would overlap each other to some degree. However, if each line is located in a separate location within grouse habitat, then each could create a substantial and unique area which grouse would likely avoid.

4.4.12.12 Grizzly Bear (*Threatened, Forest Service Sensitive*)

The Project would not cross through the grizzly bear PCA designated in the 1993 Grizzly Bear Recovery Plan, or through areas designated as suitable habitat for the grizzly bear by the USFWS; however, it would cross through the southern border of the Yellowstone DPS. This crossing would occur adjacent to I-80, US 30, and the town of Kemmerer. The cumulative effects of disturbance resulting from Gateway West and other existing or proposed activities would have negligible impacts to the grizzly bear given their broad habitat requirements and large home range, and cumulative effects on the grizzly bear would not differ substantially by alternative.

4.4.12.13 Jarbidge River Bull Trout Proposed Critical Habitat

On October 18, 2010, the USFWS made a determination regarding this proposed critical habitat (effective on November 17, 2010), and designated a total of 19,729 miles of streams and a total of about 488,252 acres of reservoirs or lakes as critical habitat for the bull trout. The transmission line would span a portion of this designated critical habitat along Alternative 9E (near node 9n); however, no road crossings would occur across bull trout critical habitat. The transmission line crossing would occur once along

the Bruneau River, located approximately 10 miles south of where this river joins C.J. Strike Reservoir. Vegetation adjacent to the crossing was defined as “Wetland and Riparian” during Project-specific remote sensing, with adjacent areas defined as “Disturbed Sagebrush,” indicating that vegetative clearing would not be necessary for the transmission line crossing. Because only Alternative 9E would cross this proposed critical habitat, selection of any other alternative along Segment 9 would completely avoid impacting this habitat, thereby eliminating any cumulative effects that the Project could have on this habitat. For Alternative 9E, part of the Preferred Route, the cumulative effects on proposed critical habitat resulting from Gateway West and other existing or proposed activities would be negligible.

4.4.12.14 Mountain Plover (*Forest Service Sensitive, BLM Special Status*)

Habitat for the mountain plover occurs along Segments 1W, 2, 3, and 4. Gateway West has the potential to result in a permanent loss of habitat, as well as contributing to new perch opportunities for raptors and ravens (as discussed for other prey species such as the black-footed ferret). The BLM and cooperating agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from Gateway West (see Section 3.11 – Special Status Wildlife and Fish Species). Planned activities that involve road construction such as infrastructure development, mining, and residential development, in combination with the access roads proposed for Gateway West, could result in substantial nest disturbance and habitat fragmentation. The cumulative effects of Gateway West on the mountain plover when considered together with the effects of past, present, and reasonably foreseeable future projects would be substantial; however, the cumulative effects on the mountain plover would not differ substantially by alternative.

4.4.12.15 Piping Plover/Whooping Crane (*Threatened/Endangered*)

No habitat for the piping plover or the whooping crane occurs near Gateway West; however, these species do occur in downstream areas along the Colorado River. Project construction and operation are unlikely to result in adverse changes to these species habitats. However, as was discussed for the federally listed fish species, any water withdrawals from the Colorado River for construction of Gateway West, or other reasonable foreseeable project, would be considered by the USFWS as an adverse effect to listed species located in downstream areas. Therefore, the cumulative effects of water withdrawals from the Colorado and Platte Rivers from past, present, and reasonably foreseeable future projects could be substantial. It is reasonable to expect that any activities requiring a federal permit would be required to fully mitigate any withdrawals, as would Gateway West, thereby reducing cumulative impact to these species.

Because there is no Route Alternative that would completely avoid water withdrawals from the Colorado River system, the cumulative effects on downstream species would not differ substantially by alternative.

4.4.12.16 Preble’s Meadow Jumping Mouse (*Threatened, Forest Service Sensitive, BLM Special Status*)

The Preble’s meadow jumping mouse could occur within wetland and riparian areas along Segments 1 and 2. Cumulative effects of past, present, and reasonably

foreseeable future projects would be similar to those discussed for the northern leopard frog and could be locally important for this species.

4.4.12.17 Pygmy Rabbit (*Forest Service Sensitive, BLM Special Status*)

The pygmy rabbit could occur within sagebrush habitats found along Segments 2 through 10. Gateway West would result in permanent habitat loss, and could result in direct mortality and an increased opportunity for predation by raptors and ravens (as was discussed for other prey species such as the black-footed ferret). The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from Gateway West (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of Gateway West on the pygmy rabbit when considered together with the effects of past, present, and reasonably foreseeable future projects would be substantial; however, the cumulative effects on the pygmy rabbit would not differ substantially by alternative.

4.4.12.18 White-tailed and Black-tailed Prairie Dog (*Forest Service Sensitive, BLM Special Status*)

Habitat for the white-tailed prairie dog occurs along Segments 1W, 2, 3, and 4; and colonies were mapped along Segments 1W and 4. Black-tailed prairie dog colonies were mapped along Segment 1W. Gateway West would result in some permanent habitat loss, as well as the possibility of direct mortality and an increased opportunity for predation by raptors and ravens (as was discussed for other prey species such as the black-footed ferret). The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from Gateway West (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of Gateway West on habitat for both species of prairie dog when considered together with the effects of past, present, and reasonably foreseeable future projects would be substantial; however, the cumulative effects on the pygmy rabbit would not differ substantially by alternative.

4.4.12.19 Wyoming Pocket Gopher (*Forest Service Sensitive, BLM Special Status*)

The Wyoming pocket gopher is only located in Carbon and Sweetwater Counties within Wyoming. Based on a habitat model created by the WYNDD, Gateway West would cross suitable habitat for this species along Segments 2, 3, and 4. Gateway West would result in some permanent habitat loss, as well as the possibility of direct mortality and an increase opportunity for predation by raptors and ravens (as was discussed for other prey species such as the black-footed ferret). The Agencies have identified mitigation measures aimed at reducing the potential increase in raptor and raven predation on prey species that could result from Gateway West (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of the Project on habitat for of the Wyoming pocket gopher when considered together with the effects of past, present, and reasonably foreseeable future projects would be substantial; however, the cumulative effects on the pygmy rabbit would not differ substantially by alternative.

4.4.12.20 Yellow-billed Cuckoo (*Candidate, Forest Service Sensitive*)

Habitat for the yellow-billed cuckoo would be crossed by the centerline of the Proposed Route along Segment 9. Out of the total length of 162.2 miles for Segments 9, the

Proposed Route would cross approximately 0.4 mile of suitable yellow-billed cuckoo habitat (see Table D.11-3 in Appendix D). Potential effects of Gateway West include habitat removal, direct mortality due to collisions with construction vehicles, and disturbance during construction. Past actions in the CIAA have removed riparian and wetland habitats and additional losses are possible due to planned transmission lines. However, the cumulative loss of riparian habitat would likely be low under all alternatives, given that it is standard engineering practice to design transmission lines to span riparian habitats and avoid placing ancillary facilities within them. The existence of multiple transmission lines through riparian habitats would also present increased risk of collisions. However, this risk would remain low given that yellow-billed cuckoos are agile flyers. The cumulative effects from Gateway West on the yellow-billed cuckoo when considered together with the effects of past, present, and reasonably foreseeable future projects would be minor.

4.4.12.21 Northern Goshawk (*Caribou and Medicine Bow Forest Plan MIS; Forest Service Sensitive; BLM Sensitive*)

The Project would impact habitats within northern goshawk territories on the Caribou-Targhee and Medicine Bow-Routt NFs. These impacts are not expected to have a substantial impact to the species (see Section 3.10); however, they would not be in compliance with the Standards and Guidelines found in the Forest Plans (see Appendix F-2). The cumulative effects from Gateway West on the northern goshawk when considered together with the effects of past, present, and reasonably foreseeable future projects would be minor.

4.4.12.22 Other Forest Service Sensitive, MIS, or BLM Sensitive Species

With the exception of the species listed above, construction and operations of Gateway West are not expected to substantially add to the cumulative effect of past, present, and reasonably foreseeable future projects on Forest Service sensitive, MIS, or BLM special status species in ways that are different than those listed in Section 4.4.11, where cumulative effects are shown to be considerable for wildlife generally. In general, cumulative effects on sensitive species would not differ substantially by alternative, except for the specific species/instances discussed above (e.g., see discussion in Section 4.4.12.7).

4.4.13 Minerals

The continued operation of existing coal, trona, and phosphate mines in the CIAA for Gateway West and the possible expansion of existing or opening of new mines would maintain and add to part of the load demand for Gateway West and other transmission lines in the area. Operation and expansion of trona mines, together with their potential for creating subsidence issues for surface infrastructure like transmission lines, already has and could continue to constrain the proposed locations of future transmission lines. This in turn could limit the ability to reduce impact to surface resources by creating a routing restriction point along the east-west alignment. The open-pit coal mine along Segment 4 may continue to expand, providing additional siting challenges to future transmission lines and constraining their options for east-west routing. It is assumed that, like Gateway West, the proponents of additional transmission lines would coordinate with the mine owners and operators and would avoid areas of high probability of future subsidence and route around active mining areas.

Oil and gas extraction also maintains and adds to part of the load demand for Gateway West and other transmission lines. The existence of the oil and gas wells and leased areas partially constrains the location of this and other proposed transmission lines, but this effect is minor because the project can span individual oil and gas extraction facilities.

The cumulative impact of Gateway West on oil and gas production when taken together with past, present, and reasonably foreseeable activities would be minor.

4.4.14 Paleontological Resources

There are several concentrations of known fossil-bearing formations close to or at the surface in the CIAA for Gateway West. Based on the indices reported in Section 3.13, which discusses paleontological resources for the Project, the most sensitive of these areas are found along Alternatives 4B through 4E, near Fossil Butte National Monument, and near Alternatives 8A and 9A, which pass near to the boundary of Hagerman Fossil Beds National Monument. In the area of high fossil sensitivity, the additional ground-disturbing activities with potential to degrade fossil-bearing formations include the proposed Zephyr transmission line; no other projects are proposed in this area. These projects have the potential to uncover fossils of potential scientific importance. However, the relatively small footprint of the several projects when compared with the large extent of the fossil-bearing formations indicates that the cumulative impact of Gateway West would be minor.

4.4.15 Geologic Hazards

Some of the Projects listed in Section 4.3 have the potential to create geologic hazards (e.g., mining activities creating subsidence, leaving unstable walls, and sinkholes). In addition, multiple crossings of earthquake zones and areas of high landslide potential by various proposed transmission lines could contribute to the possibility of catastrophic failure of several lines at once.

The Proposed Route and all Route Alternatives for Segments 4, 5, and 7 would cross areas of high earthquake risk (see Section 3.14 – Geologic Hazards, for details). Project structures could be damaged or collapse in the event of fault rupture beneath or adjacent to a tower due to inaccurate fault location during project design. Collapse of Project structures would potentially result in power outages, damage to nearby roads or structures, and injury or death to people. In addition to Gateway West, three existing 345-kV transmission lines would cross high earthquake risk areas in Segments 4, 5, and 7, as well as crossing areas of high landslide potential in the western end of Segment 4. Depending on its proposed location, the Zephyr project may also cross high earthquake risk areas in Segment 4.

BLM would require proponents of all new transmission lines to conduct geotechnical exploration and avoid locating any project facilities on earthquake traces or in areas of active land movement. Prudent engineering design and compliance with national building standards would reduce the risk for each of the transmission lines to a minor level. Taken together, the risks to each line and to the existing 345-kV lines would raise the chances that at least one of them might fail in an earthquake or landslide event. However, the cumulative risk would still be low provided that standard engineering

practices for design and construction, and the proposed operations and maintenance activities for Gateway West were also practiced by other proponents.

4.4.16 Soils

Effects on soils from Gateway West that would contribute cumulative effects include soil loss due to wind erosion, soil mixing, soil compaction, and soil contamination. Soils in the CIAA have been affected by past activities such as pipelines, transmission lines, roads, oil and gas development, OHV use, and grazing. During construction of any of the current or reasonably foreseeable projects, vegetation would be removed exposing the soil to erosional forces, soil compaction could occur from vehicle traffic, and soil excavation would cause soil mixing, although BMPs (minimizing bare soil exposed to wind, water, and steep slopes, and stockpiling topsoil for use during reclamation) are or would be used to minimize the extent of effects. Soil contamination could occur from chemical or petroleum spills, although the risk is not great. Some soil disturbance related to ongoing use of roads will remain during the life of the projects.

Loss of production due to sites occupied by facilities (transmission line structures energy generation facilities, commercial development, and the access roads to all of these) would remain during the life of the projects. Effects on soils could occur from unauthorized off-road vehicle use from construction on projects with inadequate access control.

Decommissioning and reclamation can recover some of the soil productivity, but is not 100 percent effective. Large construction projects, mining, roads, and pipelines are the projects that have the most of these types of effects on soils. The implementation of BMPs and reclamation on all projects would minimize soil impacts.

The cumulative impact of Gateway West, when taken together with the already substantial impact of past and present activities and proposed future action on some sensitive soils, could be substantial even with expected erosion control measures fully effective.

4.4.17 Water Resources

The impacts to surface waters from Gateway West include potential for sedimentation and temperature increases due to road crossing construction and ROW clearing. These impacts would be minimized but not entirely eliminated by the conditions of the SWPPP and additional mitigation measures. It is reasonable to assume that other construction projects would also minimize but not eliminate their impact. However, when taken together with the substantial degradation to surface water resources from grazing, fires, and invasive species, the additional minor impacts of Gateway West and other proposed projects would contribute to a substantial cumulative impact. Construction of Gateway West, or any other project, could affect groundwater if an accidental chemical spill occurred near an open excavation for a foundation on any of the planned projects that occur in the same area of shallow groundwater found in Segments 4, 5, and 7. The risk is relatively small because these types of spills rarely occur and because the Proponents have committed to enforce the terms of their SPCC Plan.

Water usage would also occur for most facility construction projects in the CIAA, mostly for dust control and mixing concrete for other transmission line facilities, energy

generation facilities, commercial developments, and roads. This water usage is important because of federally listed threatened and endangered plants and fish in these watersheds and the cumulative effects are discussed in Sections 4.4.8 and 4.4.12, respectively. Because Gateway West would not require any water rights, there would be no cumulative effects on water rights.

4.4.18 Land Use

The WWE Corridor PEIS (DOE and BLM 2008) designates corridors on federal lands within 11 western states (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines, as well as electricity transmission and distribution facilities. However, it does not take into account the current federal land use plans (such as the Forest Service Forest Plans or the BLM RMPs) that still exclude those uses along many parts of the corridor. As a result, the siting of these types of facilities within the WWE corridor would still require amendments to existing federal land management plans (Forest Plans, RMPs, and MFPs) that could change existing land use allocations for the affected lands. In addition, Gateway West is only partially located within this designated corridor. Gateway West would cumulatively add to the changes made to these federal land use plans by the past, present, and reasonably foreseeable future projects. The Route Alternatives that cross more public lands or would impact more sensitive resources on federal lands would have a greater contribution to this cumulative effect on public land use plans than the Proposed Route.

The Proposed Route for Segment 2 crosses the CDNST southwest of Rawlins. An existing 230-kV transmission line crosses the CDNST approximately one mile to the north, within the WWE corridor. The TransWest Express Transmission Line proposes to cross the CDNST near the Gateway West Project and the Zephyr Transmission Line may follow a similar path. In addition, the Gateway South Transmission Line proposes to cross the CDNST at a location south of these lines. If all of these lines are approved and built, they could have a substantial impact on the scenic values on and near the Trail.

Long linear projects such as Gateway West, as well as many of the other reasonably foreseeable projects within the CIAA (see Table 4.2-12), typically cross multiple land management types such as federal, state, and privately held lands. There are currently conflicting sentiments regarding the placement of these types of projects. Many feel that projects designed for the greater good of the public should be placed on public lands to the greatest extent practical, because they feel that this is consistent with the original purpose of these lands. However, others feel that public lands were designated to protect sensitive resources and should be excluded from developments whenever practical (indicating that these projects should be placed on private lands to the extent practical). Although public lands were established for a variety of reasons, and the various federal and state land management agencies manage their respective lands for different goals, this conflicting sentiment regarding the proper placement of projects meant for the public good will likely continue. The Project would cumulatively add to this debate, which has resulted from the past, present, and reasonably foreseeable future projects.

The differential cumulative effects of Gateway West when taken together with other reasonably foreseeable future actions as well as past and present actions and management is most obvious in Segments 5, 7, 8, and 9. In those segments, the Preferred Route crosses mostly private lands and various Route Alternatives cross larger proportions

of public lands than the Proposed Route. If other transmission lines were to follow the same alignment selected for Gateway West, the cumulative effects of the location of Gateway West on the lands it crosses would be substantial regardless of land ownership.

Section 4.1.3, above, details the federal land management plan amendments that would be needed to change land classification or VRM class if a particular route were selected. Table 4.4-3 summarizes those amendments for the Preferred Route by segment and alternative route; Table 4.4-4 summarizes those amendments for other proposed and alternative routes.

Table 4.4-3. Summary of Plan Amendments Having Management-level Effects for the Preferred Route

Segment	Alternative	Land Management Plan	Change	Location
4	Proposed 4, Alternative 4G	Caribou Forest Plan	A new transmission line corridor will be designated for the Gateway West Transmission Line Project, with management prescription of Management Prescription 8.1— Concentrated Development Area. The utility corridor will be 9.4 miles long and 250 feet wide with an ROS of Roded Natural. The area from the edge of the ROW out 375 feet and within 500 feet of new access roads outside this area will have an ROS of Roded Natural.	MP: 0.0 – 2.6
8	Proposed 8	Jarbidge RMP	Reclassify 5,200 acres of VRM Class I to Class III along the Oregon Trail.	MP: 45.8 – 48.1; 50.3 – 51.2
		Jarbidge RMP	MUA-3; Reclassify areas for areas within Township 4 South Range 9 East Section 35 currently designated as restricted to avoidance to accommodate Gateway West.	MP: 50.3 – 51.3
		Bennett Hills/ Timmerman Hills MFP	Reclassify VRM Class II to VRM Class III 3,000 feet north of existing transmission line ROW, including the existing ROW.	MP: 30.6 – 31.7; 33.9 – 36.4; 41.3 – 43.2; 44.3 – 45.4
		Bennett Hills/ Timmerman Hills MFP	Prohibit all land-disturbing developments within 330 feet of the Oregon Trail and manage archeological sites as required.	NHT: between MP 33.9 – 34.1; 35.4 – 35.5
9	Proposed 9	Jarbidge	Reclassify the area within the WWE Corridor to VRM Class III.	MP: 82.3 – 84.0

ROS – Recreation Opportunity Spectrum; ROW – right-of-way; VRM – Visual Resource Management; WWE – West-wide Energy

Table 4.4-4. Summary of Plan Amendments Having Management-level Effects for Alternative Routes

Segment	Alternative	Land Management Plan	Change	Location
4	Alternatives 4B, 4C	Kemmerer RMP	Decision #6051: Reclassify the VRM class to Class III in a specified location.	VRM: 4B/4C: MP 52.3–54.5, 56.7–61, 62.3–63.4
	Alternatives 4D, 4E		Decision #6051: Reclassify the VRM class to Class III in a specified location.	VRM: 4D/4E: MP 52.3–54.7, 62.9–64
	Proposed 4	Caribou Forest Plan	The area within 500 feet of the transmission line and new roads would be classified with an ROS of roaded natural.	MP 167.7–169.3
			Reclassify lands currently classified as Forest Vegetation Management, Elk and Deer Winter Range, Aquatic Influence Zone and Semi-Primitive Recreation, to Prescription 8.1, Concentrated Development Areas with ROS of Roaded Natural.	MP 161.1–170.2
7	Alternative 7E	Cassia RMP	Reclassify 39 acres in the Spring Canyon area from VRM Class II to Class III.	MP 3.6–3.9
	Alternative 7K		Reclassify 1,381 acres in the Cottonwood Creek area from VRM Class II to Class III	MP 128.9–132.8
8	Alternative 8A	Jarbidge RMP	Reclassify 2,800 acres of VRM Class I to VRM Class III along the Oregon Trail.	MP 32.9–34.2; 36.2–38.0; 42.9–43.1; 43.3–45.6; 52.0–53.0
	Alternative 8A		MUA-7: change to no surface disturbance within 330 feet of the Oregon Trail and historic sites.	MP 33.0–34.1; 36.8–38.4; 44.7–45.6
	Alternative 8A		MUA-3; Reclassify areas for areas within Township 4S Range 9E Section 35 and Township 5S Range 9E Section 2 currently designated as restricted to avoidance to accommodate Gateway West.	MP 52.0–53.0
	Alternative 8E	SRBOP RMP	Approximately 3,100 acres associated with the Oregon Trail and scenic values associated with the Snake River Canyon are designated as Class III to accommodate a major powerline ROW.	MP 9.9–11.3; 17.2–18.3

Table 4.4-4. Summary of Plan Amendments Having Management-level Effects for Alternative Routes (continued)

Segment	Alternative	Land Management Plan	Change	Location
8 (cont.)	Proposed 8, Alternative 8E	SRBOP RMP	Reduce the Snake River Canyon SRMA area by approximately 6,400 acres to accommodate a major powerline.	MP 119.6–123.8; Alt 8E: MP 9.4–10.7
	Proposed 8		Reclassify approximately 6,400 acres associated with the Oregon Trail and Snake River Canyon to VRM Class III.	MP 119.6–123.8
9	Alternative 9B, 9D/9G	Jarbidge RMP	Reclassify the area within the WWE Corridor to VRM Class III.	MP 35.9–37.5
	Alternatives 9D, 9F, 9G, 9H	SRBOP RMP	Reduce the Snake River Canyon SRMA area by approximately 6,400 acres to accommodate a major powerline.	MP: Alt 9D: 47.4–48.7; Alt 9F: 50.6–51.9; Alt 9G: 45.3–48.0; Alt 9H: 48.5–51.2
	Alternatives 9D/9G		Reduce the C.J. Strike SRMA area by approximately 3,100 acres to accommodate a major powerline.	MP: 9.4–17.1
	Alternatives 9D, 9F		Approximately 3,100 acres associated with the Oregon Trail and scenic values associated with the Snake River Canyon are designated as VRM Class III to accommodate a major powerline ROW.	Alt 9D: MP 47.9–49.3, , 55.2–58.8; Alt 9F: MP 51.1–52.5; 58.4–62
	Alternatives 9G/9H		Reclassify VRM Class II areas within 250 of route centerline to VRM Class III (maintain 0.5 mile buffer from historic trails).	Alt 9G: MP 44.7–45.6, 47.0–50.8, 51.2–56.5; Alt 9H: MP 47.9–48.7, 50.2–54, 54.4–59.7
	Proposed 9	Bruneau MFP	Reclassify VRM designation adjacent to Castle Creek from VRM Class II to VRM Class III.	MP 131.4–131.6

ROS – Recreation Opportunity Spectrum; ROW – right-of-way; SRMA – Special Recreation Management Area; VRM – Visual Resource Management; WWE – West-wide Energy

In all cases of public land reclassification listed in Tables 4.4-3 and 4.4-4, more activities in addition to the construction and operations of Gateway West would be permissible without additional land management plan amendments for the same restrictions the proposed amendments address. In several cases, where the parcel being reallocated is small, there is no additional infrastructure that could reasonably fit within the parcel in

addition to Gateway West and therefore the cumulative impact of the RMP amendment would be negligible.

Similarly, reclassification of only the ROW width on the Caribou-Targhee NF would not allow for additional utility construction in the area, but could provide an additional route for illegal and unauthorized motorized vehicle use. That use is already discussed under the impacts of the Project itself and is taken into account as an indirect effect of the Project. No additional cumulative effects are anticipated as a result of that amendment.

However, in some areas where reclassification is proposed, the amount of land being reclassified is large enough that at least some additional utility development or possibly wind energy development could occur on those reclassified lands. The assumption made under the various individual resource sections, above, is that up to two additional transmission lines could be constructed parallel to and about 1,500 feet away from Gateway West along much of its length.

Projects are sited to avoid impacting sensitive resources to the greatest extent practical. As more projects are constructed through areas located adjacent to sensitive resources, the possible paths that can be taken to avoid these resources become limited. For example, currently there are several projects that have been proposed for the same general route as used by Gateway West (due to the limited number of ways to travel through this area without impacting sensitive resources), leading to potential congestion in these areas.

Because rangelands are the most common land use within the CIAA, the past, present, and reasonably foreseeable projects have and will continue to affect it to a considerable degree. The other land use types found within the CIAA have experienced fewer impacts than rangeland, due either to their rarity in the CIAA or because developers avoid them. Much of the forested lands found within the CIAA are located on terrain that is least desirable for development (such as high elevations or mountain ridges); while wetlands and riparian areas are both rare in the CIAA, developers typically avoid these areas due to the added restrictions and regulations applicable to developments within them.

The change of cover type from forested to lower-growing vegetation on the transmission ROW removes acres in some cases from the timber production land base, resulting in loss of future revenue from loss of commercial timber acreage.

OHV use is increasing on public lands. OHV riders may have more opportunities available as a result of the Project. New access roads used for construction and maintenance provide additional avenues for riders to gain access to locations that were previously off limits or unavailable. Both increasing authorized and unauthorized OHV use is likely to result in increasing complaints from landowners and the public. As reasonably foreseeable projects increase road density at the same time OHV use increases, there will be a need for additional enforcement and physical barriers to protect some areas.

Gateway West would contribute to cumulative effects along with reasonably foreseeable projects through energy development and use of designated utility corridors as specific

areas are avoided and more development occurs but would not reduce the capacity of public or private lands to support existing land uses.

4.4.19 Agriculture

Within the Agriculture CIAA, past, present, and reasonably foreseeable activities that could combine with Gateway West and result in cumulative effects to agriculture include projects with the potential to affect prime farmland, livestock grazing, crop production, CRP lands, and dairy farms. The effects from past and present activities that have shaped current patterns of agricultural use are generally accounted for in the existing conditions overview presented in Section 3.18.1.5. The Analysis Area used for the direct and indirect effects analysis is the same area as the Agriculture CIAA.

Prime farmland comprises about 19 percent of the CIAA. Construction and operation of Gateway West would have temporary and permanent effects on prime farmland, as would other projects developed within the CIAA. Potential impacts from the Project would be reduced with implementation of the proposed reclamation methods identified in Appendix B. Segments 5, 7, 8, 9, and 10 would affect prime farmland. In all cases, the amount of prime farmland affected represents a very small share of the prime farmland located with the CIAA. Overall impacts to prime farmland in the CIAA are also likely to represent a relatively small share of the prime farmland within the CIAA.

As indicated in Table 3.18-1, the majority of the CIAA, more than 80 percent, consists of rangeland and pasture. Construction and operations of the proposed Project would have temporary and permanent effects on rangeland and pasture in the CIAA, as would the development of other reasonably foreseeable projects. Overall impacts to pasture and rangeland and livestock grazing are likely to represent a small share of the rangeland and pasture within the CIAA.

Irrigated and dryland cropland is concentrated in the Idaho portion of the CIAA, and combined, these range from about 4 percent of the CIAA for Segment 4 to 46 percent of the CIAA for Segment 10. Construction and operations of the Project would have temporary and permanent effects on the area available for crop production in the CIAA. Other potential effects to cropland could include damage to or loss of crops, decreases in crop yield, restrictions to farm vehicle access or aerial spraying operations, and disruption of drainage and irrigation systems. As discussed in Section 3.18 – Agriculture, these types of potential effects are difficult to quantify and would likely be determined through negotiation with landowners.

Reasonably foreseeable actions including Gateway West would continue to affect farmland by removing acres from production either through development or commercial facilities, or through the construction of transmission line facilities and access roads.

The impact in Segment 1 would be small and would not vary substantially by alternative. There is no pivot irrigation in or near the Project area, very small amounts of other irrigated agriculture, and a predominance of extensive grazing. Similarly, Segment 2 would have very little impact on agriculture because there is no cropland and a predominance of extensive grazing. Segment 3 has no alternatives and no irrigated agriculture. Cumulative effects of the Project to grazing in this area, when taken into consideration together with ongoing resource extraction and proposed additional transmission lines, would be negligible because of the expanses of available private and

public grazing lands. Core Areas delineated for sage-grouse in the vicinity of Segments 2 and 3 may limit or preclude additional development other than transmission lines allowed in EO 2011-5 corridors.

Alternatives 4B, 4C, 4D, and 4E would all cross areas currently flood- or sub-irrigated by the Bear River within the boundaries of, or immediately adjacent to, the Cokeville Meadows NWR. If one of these alternatives were selected and other proposed transmission lines were to follow the Project alignment in this area, but with a minimum of 1,500 feet of separation, there could be up to three transmission lines crossing irrigated lands in addition to the two existing 345-kV transmission lines. If the proponents of the future transmission lines each worked to locate the towers along field boundaries, the impact would be lessened.

The Proposed Route for Segment 4 in Idaho would cross areas currently flood- or sub-irrigated by the Bear River near the town of Montpelier, agricultural lands near Thatcher, and extensive dryland and irrigated agriculture near the town of Downey to the east of Populus. While there are no alternatives to this portion of Segment 4, if the Project is approved, any Wyoming alternative selected would also require the construction of this portion. In that area there are two existing 345-kV lines. If other proposed transmission lines were to follow the Project alignment in this area, with a minimum of 1,500 feet of separation, there could be up to three transmission lines crossing crop and pasturelands in addition to the two existing 345-kV transmission lines. If the proponents of the future transmission lines each worked to locate the towers along field boundaries, the impact would be lessened. While the number of acres that would be occupied for the duration of the operation of the Project is not large, the construction and operation of an additional transmission line in the same area (Zephyr), when taken together with the ongoing loss of agricultural land to residential, commercial, and industrial development, could have a cumulatively substantial impact on farming along the Idaho portion of Segment 4.

The Proposed Route for Segment 5 would cross agricultural lands as it leaves Populus and crosses the Marsh Valley. After crossing the Deep Creek Mountains, it would cross both dryland and irrigated agricultural lands in the Arbon Valley.

SWIP North, which has been granted major project permits and construction is pending, could affect agriculture lands in Segments 9 and 10. When taken together with the ongoing loss of agricultural land to residential, commercial, and industrial development, the small additional area lost to various transmission lines could be important to farmers.

4.4.20 Transportation

Linear facilities invariably need to cross other linear features such as highways and railroads. These crossings can interfere with use of the roads and railroads during project construction, including the need to reroute or delay traffic. However, these impacts would be temporary and only last as long as construction activities occur within the area. If other reasonably foreseeable projects are construction at the same time and location as Gateway West, or immediately before or after this project, then there could be a minor temporary cumulative effect on traffic volumes on local roads, which would be mitigated by traffic controls required by both county and federal regulations.

Cumulative impacts on transportation do not differ substantially by alternative, because the measures in place to protect the public during both construction and operations would apply both for Gateway West and other projects.

4.4.21 Air Quality

As stated in Section 3.20 – Air Quality, existing air quality in Idaho and Wyoming is generally good to excellent. Current air emissions in each state due to present activities, including power plant operation, residential use of wood for heating, use of gasoline- and diesel-powered cars and trucks for most transportation of people and cargo, and occasional wildfires in brush or forested areas, do not have a substantial cumulative adverse effect on air quality as demonstrated by the USEPA classification of “attainment” for all of Wyoming and for most of Idaho. Proposed projects in the CIAA that could contribute to deterioration in air quality include two proposed coal-fired power plants in Wyoming, which will contribute to reductions in air quality once they are active. As noted in Section 3.20, these plants may have a lifespan of 50 years or more. In addition, the three proposed natural gas power plants in Idaho would contribute to reductions in air quality in southern Idaho, where there are two areas of non-attainment for PM₁₀.

Because Gateway West would have no measurable impact on air quality within the CIAA for either state, it would not contribute to the cumulative impact of other projects on air quality in the CIAA. This is the case across all alternatives.

Estimated total CO₂ emissions from construction of the Project are 221,668 tons. Approximately 40 percent of these emissions, or 88,667 tons CO₂, is allocated to Wyoming, and approximately 60 percent, or 133,000 tons CO₂, is allocated to Idaho. On an annual basis, the project construction CO₂ emissions for Wyoming and Idaho are 17,386 and 26,078 tons CO₂ per year, respectively.

Predicted CO₂ equivalent emissions (total emissions of all greenhouse gases converted to equivalent of CO₂) for 2010 are 66,330,000 tons CO₂ equivalent for Wyoming, and 43,560,000 tons CO₂ equivalent for Idaho (CCS 2007, 2008). The construction CO₂ equivalent emissions from the Project represent approximately 0.037 percent of the annual total for Wyoming, and 0.048 percent of the annual total for Idaho. Greenhouse gas emissions from operations activities would be less than 3 tons CO₂ equivalent per year. Therefore, construction and operations of Gateway West would not add substantially to the cumulative effects of past, present, and reasonably foreseeable future projects in terms of greenhouse gas emissions.

4.4.22 Electrical Environment

The analysis of electrical effects determined that Gateway West would have no effects on health or safety; therefore, there would be no cumulative effects to other past, present, or reasonably foreseeable future projects. This is the case across all alternatives. Cumulative effects of noise due to corona effects are treated in Section 4.4.24.

4.4.23 Public Safety

Like Gateway West, nearly all current and reasonably foreseeable construction and long-term operations projects have requirements to monitor and treat noxious weeds,

which includes the use of herbicides in many cases. Use of herbicides does not pose a risk to public health and safety when label instructions are followed, as is required. Construction of any project also has the risk of uncovering previously unknown environmental contamination. Remediation methods would be applied to control and reduce risk from past environmental contamination if any is found that would spread or affect public health.

Electrical projects (transmission and distribution lines, substations, etc.) pose a risk of electrocution; however, requirements for fencing and posting these sites where people might come into contact with them effectively minimize the risk.

In the past, transmission and distribution lines have caused wildland fires. New construction techniques and equipment as well as ongoing maintenance standards result in newer lines posing much less of a risk than older and smaller electrical lines. Employment of current safety standards to the construction and operations of Gateway West would reduce the risk to public health and safety to minor. Cumulative effects on public safety do not differ substantially by alternative because the measures in place to protect the public during both construction and operations would apply both for Gateway West and other projects. Assuming other present and future projects would also be required to adhere to current safety standards, the cumulative effects of these projects would not be substantial.

4.4.24 Noise

Cumulative impacts due to construction noise could occur within 1,000 feet of the Project area or ancillary facilities as other projects or activities add to the noise from the time of Gateway West construction. In some cases, other construction projects could be using the same roads as Gateway West and additional construction-related traffic noise could occur, though it is very unlikely that these projects would be constructed concurrently. No substantial long-term changes in the volume of traffic and resulting potential transportation noise impacts are expected. Therefore, Gateway West would not contribute substantially to adverse cumulative noise impacts during construction.

Operations noise from Gateway West is limited to corona noise. Corona noise is not audible outside the ROW. Cumulative impacts on noise do not differ substantially by alternative because the measures in place to reduce noise of both construction and operations would apply both for Gateway West and other projects. With the exception of limited areas where Gateway West crosses other transmission lines, there would be no cumulative effect when taken together with other transmission lines because of the separation distances and lack of sensitive receptors.