

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, Design Variation, Structural Variation, or Schedule Variation 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 (2008h).
- *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 DICIAA	Furthest distance within which this Project is generally visible, given visual attenuation in this Project area.
Cultural	DICIAA for cultural resources without TCP or visual components; for resources for which setting is a component of eligibility, up to 5 miles from the DICIAA.	Likely area impacted includes the proposed maximum ROW width (350 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 that are overlapped by the DICIAA.	Area required for a female home range (published on July 19, 2006).
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 2002).
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 most recently mapped and published on by the WGFD as important habitat for greater sage grouse in Wyoming.
	Key and restoration habitat polygons that are crossed by the DICIAA (Idaho).	Areas most recently mapped and published by IDFG as crucial to the protection and recovery of greater sage grouse in Idaho.
	Distance from leks: area within 0.25 mile of known greater sage-grouse lek	Based on BLM “no surface occupancy” land use designation applicable across Wyoming, as designated within the various BLM RMPs at the time of initial Project design (2008).
	Distance from leks: area within 0.6 mile of known greater sage-grouse lek	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.
	Distance from leks: area within 1 mile of known greater sage-grouse lek	The Proponents chose to also assess impacts to leks at a distance of 1 mile, given 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 Conservation Plan for the Greater Sage-grouse in Idaho (Connelly et al. 2000).
	Distance from leks: area within 3 miles of known greater sage-grouse lek	The Proponents chose to also assess leks at a distance of 3 miles, given the uncertainty regarding potential lek disturbances at varying distances.
	Distance from leks: area within 4 miles of known greater sage-grouse lek	As required by Wyoming Governor Executive Order 2011-5, and on the requirements of the BLM Instructional Memorandum (BLM 2009c).
	11 mile buffer around the Project (22-mile-wide analysis corridor)	Based on the requirements of the BLM Instructional Memorandum (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) 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 federal 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 Appendix G contains maps and visual analysis documentation, including photographs and simulations, in support of the amendments analyses.

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. 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 in addition to the cumulative effects of the proposed Project itself. For land use plan amendments, in addition to considering the cumulative effects of the Project itself, 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.

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 and the Segment 1E Proposed Route, an amendment for the Casper RMP would also need to be considered. There are four areas of nonconformance along the Proposed Routes in the Casper FO—in three areas the Project would be permitted through a plan amendment that would not change the underlying VRM classification. In one case, in the Deer Creek Mountains area, the RMP amendment would reclassify an isolated 630-acre parcel of Public Land from VRM Class II to Class III.

This parcel of BLM-managed land abuts private land to the west, north, and east, and abuts the Medicine Bow-Routt NFs to the south. This parcel would be crossed by the Segment 1W(a), 1W(c), and 1E Proposed Routes, all 230-kV, H-frame construction transmission lines. In this area, the Segment 1W(a) Proposed Route would be located

in the ROW for the existing transmission line, which also forms the centerline of WWE Corridor 78-255. That corridor occupies over half the BLM parcel. No other proposed projects are known in this area.

However, the cumulative effects of this RMP amendment beyond those of the proposed Project itself are negligible because the parcel is isolated and adjacent to private lands not similarly managed, and the two new lines, in addition to the reconstruction of the existing line, would effectively occupy virtually all of the developable land in BLM management, leaving very little room for additional linear or other industrial development.

4.1.3.2 Medicine Bow National Forest Land and Resource Management Plan

To consider permitting the construction and operations of the Segment 1E Proposed Route (prior to where Alternative 1E-B would diverge and therefore also necessary for Alternative 1E-B) and Alternative Route 1E-C, an amendment for the Medicine Bow Forest Plan would also need to be considered. A plan amendment is required because the Segment 1E Proposed Route, which crosses MA 3.31 (Back Country Recreation-Year-round motorized with a Moderate SIO) for approximately 2.7 miles is not consistent with the SIO. Similarly, Alternative 1E-C, which crosses MA 3.31 for approximately 1.3 miles, is not consistent with the SIO. Forest Plan direction states the SIO of Moderate is “Management activities remain visually subordinate to the characteristic landscape being viewed. Activities may repeat form, line, color, or texture common to the characteristic landscape but may not change in their qualities of size, amount, intensity, direction, pattern, etc.” Transmission lines are considered inconsistent with the SIO of Moderate.

If the Segment 1E Proposed Route (or Alternative 1E-B) is approved, Sections 13, 14, 23, and 24, T.30 N., R.78 W. and the west half of Sections 18 and 19, T.30 N., R.77 W. would be allocated to MA 8.3 Utility Corridors and Electronic Sites. If Alternative 1E-C is selected instead of the Proposed Route, only Sections 13, 14, 23, and 24, T.30 N., R.78 W. would be allocated to MA 8.3 Utility Corridors and Electronic Sites. The ROS classification for MA 8.3 is Roaded Natural; under this classification, modifications may be easily noticed and strongly dominant to observers within the area.

Changing the classification for these areas (approximately 3,200 acres in the case of the Segment 1E Proposed Route or Alternative 1E-B and approximately 2,560 acres in the case of Alternative 1E-C) would permit additional utilities and supporting roads in these areas of the NF.

This portion of the NF abuts either private land or isolated BLM-managed parcels on the north, west, and south. If the Project is approved, two additional transmission lines as well as an entirely reconstructed transmission line would cross this portion of the NF. These transmission lines are separated from one another by at least 1,500 feet. There are no known additional projects proposed in this area but other transmission lines could be proposed without requiring a plan amendment for the NF. The area is also crossed by WWE Corridor 78-255, which would be entirely occupied by the Project if approved. The cumulative effects of this amendment beyond those of the proposed Project itself would be small because the two new lines, in addition to the reconstruction of the existing line, would effectively occupy much of the area. It would be feasible for

additional transmission lines to be routed in the listed parcels of NF without requiring a management plan amendment. Wind farms could be located in the area as well without a management plan amendment. However, no other transmission lines or wind farms are proposed for this area. Therefore, cumulative impacts due to reasonably foreseeable future actions are likely to be negligible.

4.1.3.3 Rawlins Resource Management Plan

To consider permitting the construction and operations of Proposed 1E and Alternative 1E-B, an amendment for the Rawlins RMP would also need to be considered. In AOI-R-2, near the Rock Creek and Fort Fetterman Road, the amendment would alter the VRM classification of four isolated parcels of public lands from VRM Class II to III—one parcel of approximately 80 acres and two parcels of approximately 40 acres each, all largely surrounded by private lands without land use limitations due to VRM. Additional amendments would be one-time allowances for this Project only and therefore would have no additional cumulative effects beyond those of the Project itself.

These parcels are relatively small and isolated from other parcels of public land. If Alternative 1E-B is approved, the ROW would occupy a portion of the parcels, and the transmission line separation criteria would preclude inclusion of other lines across these parcels. The cumulative effects of this RMP amendment beyond those of the proposed Project itself would be negligible because the parcels are isolated and adjacent to private lands not similarly managed, and the two new lines, in addition to the reconstruction of the existing line, would effectively occupy virtually all of the developable land in BLM management, leaving very little room for additional linear or other industrial development. Other development such as wind power is unlikely in such close proximity to the transmission towers and on small, isolated parcels. No wind projects or transmission lines are proposed in the area.

4.1.3.4 Green River Resource Management Plan

The Proposed Route along Segment 4, if selected, would require a plan amendment to the Green River RMP regarding visual and wildlife resources, while Segment 3 of the Proposed Route and Alternatives 4B, 4C, 4D, and 4E would require an amendment related to wildlife resources (raptor nests and sage-grouse leks). These amendments would be needed if either Proposed Segments 3 and 4, or Segment 3 and Alternatives 4B/4C/4D/4E are approved in order to grant of a ROW for the Project across lands managed under the Green River RMP. All of these amendments would be one-time allowances for this Project only and therefore would have no additional cumulative effects beyond those of the Project itself.

4.1.3.5 Kemmerer Resource Management Plan

To consider permitting the construction and operations of Alternatives 4B, 4C, 4D, and 4E, an amendment for the Kemmerer RMP would also need to be considered. Amendments that would be needed for the Proposed Route and other alternatives would be one-time allowances for this Project only and therefore would have no additional cumulative effects beyond those of the Project itself.

Amendments are needed because the Project as proposed is not in conformance with the RMP. The Proposed Route and portions of 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 reclassifying 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.

Although not required to approve these Route Alternatives, the FO recommends designating a corridor for future utility placement if either Alternative 4B or 4D is approved:

Designate a utility corridor 1 mile in width, generally centered on the transmission line if either Alternative Route 4B or 4D is selected.

This would impact 64,603 acres if Alternative 4B is chosen and 64,974 acres if Alternative 4D is chosen. Additional amendments that are required would be one-time allowances for this Project (Proposed or various Alternative Routes) only and therefore would have no additional cumulative effects beyond those of the Project itself.

Changes in the VRM designation and the possible designation of a utility corridor along either Alternative 4B or 4D, if they are chosen and constructed, would have the effect of encouraging further transmission development to be sited in this corridor. Two proposed transmission lines, a 500-kV DC (TransCanada's Zephyr line) and a 500-kV DC or AC line (Jade Energy's Overland Intertie) were originally proposed to follow the Gateway West alignment. Both projects are on hold as of June 2011. If either moves forward in the future, they would likely be built along this alignment and in the designated utility corridor if this Project were approved and constructed in this location. 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. Cumulative impact of additional transmission line construction is analyzed by resource in Section 4.4, below.

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. This portion of Segment 4 is in Idaho and in an area where no alternatives are being considered. If the Proposed Route or any of the Route Alternatives in Segment 4 are approved, an amendment would be needed to be consistent with Forest Plan direction to designate the ROW for the proposed double-circuit 500-kV line as Prescription 8.1—Concentrated Development Areas. The corridor would be 9.2 miles long by 300 feet wide (335 acres) and would have a VQO of Modification. An area 1,000 feet wide and centered on the transmission line and new access roads would have an ROS of Roaded Natural. This corridor is too small to accommodate any additional transmission lines or other utility infrastructure. Any additional transmission 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.

4.1.3.7 Malad Management Framework Plan

Land use plan amendments in the area of the Malad MFP would be needed if the Proposed Routes for Segments 5 and 7 or Alternatives 7A, 7B, 5A, or 5B are selected. Segments 5 and 7 as well as Alternatives 7A, 7B, 5A, and 5B would all require an amendment for ROW allowance². Segment 5 would cross 2 miles of VRM Class II and 2.8 miles of VRM Class III land and would not conform to the visual management goals for these parcels. Segment 7 would cross 1.3 miles of VRM Class II and 2.9 miles of VRM Class III land and would not conform to the visual management goals for these parcels.

Segment 5 would also cross a VRM II parcel adjacent to the Snake River. If it is selected, the VRM Class II designation for the 35-acre parcel containing the pipeline recreation site (3 miles southwest of American Falls on the Snake River) would be changed to VRM Class IV (AOI M-2). A pipeline crossing of the Snake River is visible from that campground now. Reasonably foreseeable projects proposed include two proposed transmission lines, a 500-kV DC (TransCanada's Zephyr line) and a 500-kV DC or 500-kV AC line (Jade Energy's Overland Intertie), which were originally proposed to follow the Gateway West alignment. Both projects are on hold as of June 2011. If either moves forward in the future, they would likely be built along the approved Project alignment. The 35-acre designation change to VRM Class IV would not affect the approval process for these lines, because they would each need one or more land use plan amendments to be approved. Therefore, the cumulative impacts of the plan amendment that changes the VRM classification of the 35-acre parcel would be essentially identical to the cumulative effects of the Project itself.

² The Pocatello FO is in the process of preparing a new RMP; if approved, it would replace the Malad MFP. The ROW restriction is not carried forward in the proposed RMP; however until a new RMP is approved, the management direction in the 1981 Malad MFP applies.

4.1.3.8 Cassia Resource Management Plan

Because Segment 7 of the Proposed Route and Alternatives 7E, 7H, 7I, and 7J are not in conformance to the direction provided in the Cassia RMP, the land use plan would need to be amended if any of these routes is selected. The Project does not conform to VRM objectives in four areas depending on the route selected. Alternative 7H would cross VRM Class II and III areas, an isolated parcel managed as VRM Class II would be crossed by Alternative 7E, and VRM Class II and III areas within the Goose Creek Travel Zone would be crossed by Alternatives 7I and 7J.

For Alternative 7E:

“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 (AOI CA-3 in Appendix G-1) from VRM II to VRM III

For Alternative 7H:

“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: the area north of the ROW (122 acres) in the Jim Sage area (AOI CA-1 in Appendix G-1), and 806 acres Cottonwood Creek area (AOI CA-2 in Appendix G-1) from VRM III to VRM IV.”

Alternatives 7I and 7J would cross approximately 348 feet mapped as VRM Class II and approximately 1,241 feet mapped as Class III in the Goose Creek Travel Zone. The transmission line would not conform to these VRM classes in these two areas. The proposed amendment (changes in italics) would read:

“The area classified as VRM Class II in the Goose Creek Travel Zone (within one-half mile of the Goose Creek Road between Wilson Pass and the Utah border), will be reclassified as VRM Class III.”

For Alternatives 7E or 7H, 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, though none is immediately adjacent. There are no other transmission lines or other projects known in this area. However, if either Alternative 7H 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 plans.

For Alternatives 7I or 7J, a total of 21 acres of the Goose Creek Travel Zone would be reclassified to VRM Class III. This action would remove the scenic protection for this area. This area change is too small to accommodate any additional transmission lines or other utility infrastructure. Any additional transmission proposed through this area would need a separate plan amendment. Therefore, the impacts of the amendment would have no additional cumulative impacts beyond those of the Project itself, discussed in Section 4.4, below. 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

The Proposed Route does not cross the Sawtooth NF; however, three alternatives to Segment 7 of the Proposed Route (Alternative Routes 7H, 7I and 7J) do cross the NF.

Alternative 7H crosses two divisions of the Sawtooth NF—the Sublett and Albion Mountain Divisions—or a total distance of 11.4 miles, and passes within 0.5 mile of the northern boundary of the Black Pine Division. Alternative 7H crosses 7.2 miles of NFS lands allocated to MA 6.1 – Restoration and Maintenance Emphasis within Shrubland and Grassland Landscapes; 2.7 miles of land allocated to MA 4.2 – Roaded Recreation Emphasis; and 1.5 miles allocated to MA 5.1 – Restoration and Maintenance Emphasis within Forested Landscapes. If approved, it would cross the Albion Division along an existing road but between two roadless areas.

Alternative 7I crosses two divisions of the Sawtooth NF—the Sublett and Cassia Divisions—for a total distance of 29.6 miles, and passes within 0.5 mile of the northern boundary of the Black Pine Division. Alternatives 7H, 7I, and 7J share the same alignment where they cross the Sublett Division. An estimated 30.2 miles of new road would be required for the portion of Alternative 7I that crosses the Sawtooth NF. Alternative 7J shares the same alignment as 7I until MP 137.2, at which point it turns west, crossing approximately 0.2 additional mile of Sawtooth NF before leaving the NF and crossing BLM-managed and private lands.

The NEPA analysis for the Project indicates that approval of the special use permit would be inconsistent, in some instances, with Standards and Guidelines in the Forest Plan. Alternatives 7H, 7I, or 7J (if selected) would not meet Modification or Partial Retention VQOs where they cross the Sawtooth NF. If one of these alternatives is approved, a plan amendment would be needed to permit the crossing of these VQOs by the Project as a one-time allowance without changing the management prescription. This amendment would not change underlying land allocations, and the cumulative effect of the amendment would be the same as the cumulative effect of the Project itself.

Portions of Alternative 7H, 7I, or 7J, if selected, would not be consistent with the management standard for summer Primitive and Semi-Primitive motorized areas. The affected area (at least 500 feet on each side of the transmission line and along new permanent roads) would be designated (mapped) as Roaded Natural. This is equivalent to an estimated 1,234 acres for 7H and 8,465 acres for 7I/7J. However, this designation does not allow for additional infrastructure to be developed because the width of the resultant corridor is too narrow to accommodate any other utilities or developments. Therefore, the cumulative impacts of the plan amendment would be essentially identical to the cumulative effects of the Project itself.

4.1.3.10 Twin Falls Management Framework Plan

The Twin Falls MFP, covering a portion of the Burley FO, does not permit powerlines to the east or west of the two corridors, and the 1989 amendment restricts activities within the designated Salmon Falls Creek ACEC. Segment 9 of the Proposed Route and

Alternatives 9A, 7I, and 7J would not conform to the Twin Falls MFP. This amendment would not change underlying land allocations, and the cumulative effect of the amendment would be the same as the cumulative effect of the Project itself.

The Segment 9 Proposed Route would cross a portion of Salmon Falls Creek, currently designated as an ACEC, which is also an eligible WSR (evaluation conducted by the Burley District Office in 1992 and finalized in 2009). A plan amendment cannot be used to address the issues associated with crossing the eligible WSR segment and has not been proposed for this crossing. An alternative crossing of the river (Alternative 9C) would avoid the eligible WSR and the ACEC; therefore, the remaining portions of the Proposed Route are feasible. However, portions of the remaining route would not conform to visual resource direction in the MFP and an amendment would be required.

Seventy acres of previously VRM Class II land in the Rock Creek Area would be reclassified to VRM Class III. However, this reclassification would be adjacent to private land not managed for VRM objectives. When complete, the reclassification would make management consistent across the whole BLM parcel.

4.1.3.11 Jarbidge Resource Management Plan

The Jarbidge RMP designates utility avoidance/restricted areas for cultural features, designates VRM Class I and II areas, and establishes an ACEC along Salmon Falls Creek. The proposed Project would not conform to these requirements in the Jarbidge RMP; thus, amendments to the plan would be needed for Segment 9 Proposed Route or Alternatives 8A, 9B, 9D, or 9G, if any are selected.

The 1989 Amendment to the Jarbidge RMP designated the Salmon Falls Creek ACEC. Management requirements within this Amendment states:

No development in the Salmon Falls Creek ACEC.

The Segment 9 Proposed Route would cross a portion of Salmon Falls Creek, currently designated as an ACEC, which is also an eligible WSR (evaluation conducted by the Burley District Office in 1992 and finalized in 2009). A plan amendment cannot be used to address the issues associated with crossing the eligible WSR segment and has not been proposed for this crossing. An alternative crossing of the river (Alternative 9C) would avoid the eligible WSR and the ACEC; therefore, the remaining portions of the Proposed Route are feasible.

The Segment 9 Proposed Route would cross 1.7 miles of VRM Class II within the WWE Corridor. 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. The Jarbidge RMP protects visual resources. These RMP decisions would be rewritten to allow the development of this Project.

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 (affects AOs, J-2, BOP-1/J-3, J-4, and J-5).*”

The Segment 8 Proposed Route would cross VRM Class I land associated with the Oregon NHT. 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.*”

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.*”

Segment 8 of the Proposed Route would require a plan amendment to the Jarbidge RMP if it were selected. The amended text would read (changes in italics):

“The existing ruts of the main route, north and south alternate routes of the Oregon Trail and Kelton Road will be protected by not allowing incompatible uses to occur within 0.5 mile corridor through which these routes pass, *except where within the WVEC, where no surface disturbance will be allowed within 330 feet of the trail.*”

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 WVEC corridor would allow additional utilities to be installed in the corridor without an additional plan amendment. The revision of VRM classes along the Proposed Segment 8 would also allow for an additional transmission line (assuming WECC-mandated spacing) immediately parallel to the proposed Project without additional plan amendments. However, the areas that would be changed are 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.

4.1.3.12 SRBOP Resource Management Plan

The SRBOP RMP, approved in September 2008, guides decisions made by the Four Rivers FO regarding actions that occur in the SRBOP MA. A plan amendment would be needed if Segment 8 of the Proposed Route or Alternatives 8D, 8E, 9D, 9F, 9G, or 9H are 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/9F (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 within 250 of the Route centerline would be reclassified to VRM Class III, taking into account the need for a 0.5 mile buffer from NHTs. *Mitigation will include adjusting the alignment to ensure a 0.5 mile buffer from NHTs is maintained*”

The Proposed Route for Segment 8 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 R/W.*”

Alternatives 9D and 9G would pass through Cove, a non-motorized area within the portion of the C.J. Strike SRMA that would be affected by the proposed amendment. The BLM Boise District has stated that they would not approve an amendment for a route through the Cove Non-motorized Area. Therefore, while the current alignment for these alternatives would not be permitted due to the restrictions in the Cove Non-motorized Area, the amendment for the C.J. Strike SRMA is presented to document the degree of change that would otherwise occur if this route were approved.

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.

4.1.3.13 Bennett Hills/Timmerman Hills Management Framework Plan

The Bennett Hills/Timmerman Hills MFP (1980) provides direction for management of public land under the jurisdiction of the Shoshone FO in south-central Idaho. The Segment 8 Proposed 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 addition 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.

4.1.3.14 Wells Resource Management Plan

Actions that occur on lands managed by the Wells FO of the Elko District, including the granting of ROW under Title V of the FLPMA, are guided by decisions recorded in the Wells RMP approved in 1985. The RMP currently restricts new utilities to identified corridors. Thus, the Project would not conform to the Wells RMP as currently written. Approximately 8.7 miles of Alternatives 7I and 7J would affect areas managed under the Wells RMP. The two alternative routes are co-located in this area.

The proposed amendment to the Wells RMP would be a one-time allowance to accommodate Alternatives 7I or 7J and therefore would have no additional cumulative effects beyond those of the Project itself.

4.1.3.15 Bruneau Management Framework Plan

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 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 282-acre parcel of VRM Class II designated land adjacent to Castle Creek will be reclassified to VRM Class III. This designation is reflective of the presence of the WWE corridor, which comprises 177 acres of the VRM II parcel.

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.

4.1.3.16 Kuna Management Framework Plan

The Kuna MFP, approved on March 22, 1983, guides actions that occur with its planning area on lands managed by the Four Rivers FO. Because the Project does not conform to the current direction provided in the Kuna MFP for cultural resources and following existing corridors, the land use plan would need to be amended if the Segment 8 of the Proposed Route or Route Alternatives 8B, 8C, or 8D is selected.

The 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.

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 the Gateway West Project 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 iron, 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 Gateway West 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

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

Proponent	Project	Gateway Segment	Gateway Proposed Route Mileposts (parallel)	Gateway Proposed Route Milepost (crossed)
PacifiCorp	230-kV Johnston to Casper	1E, 1W(a)		1.1 (Segment 1E); 7.7 (Segment 1W[a])
PacifiCorp and Western	230-kV Spence to Johnston	1E, 1W		9.8 (Segment 1E); 12.8 (Segment 1W[a]); 3.4 (Segment 1W[c])
PacifiCorp	230-kV Difficulty to Dave Johnston	1W(c)	Proposed Action is to reconstruct this line	multiple crossings of 1Wc
Western	115-kV Medicine Bow to Miracle Mile and 115-kV Miracle Mile to Tap	1E, 1W, 2		70.5 (Segment 1W[c]); 100.4 (Segment 1E); 0.1 (Segment 2)
Western	115-kV Tap to Miners	2	16.6–18.3	
PacifiCorp	230-kV Miners to Difficulty	2	16.6–18.3	
PacifiCorp	115-kV Medicine Bow Coal Co. to Miners	2		18.6
PacifiCorp	230-kV Platte to Miners	2	18.3–22.0, 36.8–50.5	multiple crossings of 2
Tri-State G&T Ass.	115-kV Rawlins to Trowbridge	2		40.6
PacifiCorp	230-kV Platte to Bar X	2, 3	50.6–95.42 (Segment 2); 0–3.2 (Segment 3)	
PacifiCorp	230-kV Mustang to Bridger	3		2.9 (along 345 kV)
PacifiCorp	230-kV Bar X to Point of Rocks	3	3.2–18.4	18.4
PacifiCorp	230-kV Rock Springs to Bridger	3, 4	2.1–2.3 (Segment 3 230 kV)	2.1 (Segment 4)
PacifiCorp	230-kV Point of Rocks to Bridger	3, 4	2.1–2.3 (Segment 3 230 kV)	2 (Segment 4)
Idaho Power	345-kV Bridger to Goshen	4	2.7–46.2, 57.5–67.8, 134.4–143.0, 147–148.2	68.2 and 148.5
PacifiCorp	230-kV Rock Springs to Atlantic City SW Station	4		25.1
PacifiCorp	230-kV Chappel Creek to Tap	4		110.4
PacifiCorp	138-kV Oneida to Ovid	4		157.9
PacifiCorp	Three 138-kV lines from Grace to Oneida	4		182.5
PacifiCorp	345-kV Bridger to Kinport	4, 5, 7	2.7–46.2, 57.5–67.8, 134.4–143.0, 147–187, 200.0–202.9 (Segment 4); 0–15.2 (Segment 5); 0–15.5 (Segment 7)	68.2 (Segment 4); 15.2 (Segment 5); 9.2 (Segment 7)
PacifiCorp	345-kV Bridger to Borah	4, 5, 7	2.7–46.2, 57.5–67.8, 134.4–143.0, 147–187, 200.0–202.9 (Segment 4); 0–15.2, 48.9–54.2 (Segment 5); 0–15.5 (Segment 7)	68.2 (Segment 4); 15.2 & 54.4 (Segment 5); 9.2 (Segment 7)
PacifiCorp	230-kV Treasureton to Brady	4, 5, 7	200.0–202.9 (Segment 4); 0–15.2 (Segment 5); 0–15.5 (Segment 7)	15.2 (Segment 5); 9.2 (Segment 7)

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

Proponent	Project	Gateway Segment	Gateway Proposed Route Mileposts (parallel)	Gateway Proposed Route Milepost (crossed)
PacifiCorp	345-kV Ben Lomond to Borah	4, 5, 7	200.0–202.9 (Segment 4); 0–15.2, 48.9–54.2 (Segment 5); 0–15.5 (Segment 7)	15.2 & 54.3 (Segment 5); 9.2 (Segment 7)
PacifiCorp	500-kV AC Populus to Ben Lomond (to Terminal) in Utah	4,5,7	last mile	
PacifiCorp	138-kV Malad to Borah	5, 7	48.9–54.2 (Segment 5)	26.2 (Segment 5); 26.4 (Segment 7)
Idaho Power	138-kV Brady to Tap	5	48.9–50.8	
Idaho Power	230-kV Borah to Brady	5	53.0–54.6	
Idaho Power	345-kV Kinport to Borah	5	53.0–54.6	
Bonneville Power	138-kV Heglar to Raft	7		58.5
Raft River Rural Electric Coop	138-kV Yale to Tap	7		72.5
Raft River Rural Electric Coop	138-kV Tap to Tap	7		72.7
Bonneville Power	138-kV Tap to Jackson	7		76.2
Bonneville Power	138-kV Second Lift to Tap	7	76.3–78.1	78.4
Bonneville Power	138-kV Tap to East Hills	7	78.3–80.9	78.2 & 80.9
Idaho Power	345-kV Midpoint to Humbolt	7, 9, 10	0–8.1 (Segment 9); 0.0–11.5, 17.0–33.5 (Segment 10)	117.9 (Segment 7); 1.6 (Segment 10)
Idaho Power	138-kV Wells to Upper Salmon Falls	9	27.8–34.0	32.1
Idaho Power	138-kV Blue Gulch to Upper Salmon Falls	9	27.8–34.0	32.1
PacifiCorp	500 kV Burns to Midpoint	8, 9	0–7.0, 49.5–56.0, 58.0–87.0, 90.1–117.3, 126.0–131.0 (Segment 8)	49.5 and 127.1 (Segment 8); 161.3 (Segment 9)
Idaho Power	230-kV Micron to Midpoint	8	0–7.0, 49.0–89.4	49.0
Idaho Power	230-kV Midpoint to Unknown	8	0–47.7	47.7
Idaho Power	138-kV Toponis to Upper Malad	8		18.8
Idaho Power	138-kV Upper Malad to Tap	8		22.3
Idaho Power	138-kV Tap to Sailor Creek	8		54.8
Idaho Power	138-kV Tap to Glens Ferry Pipeline	8		59.9
Bonneville Power	115-kV Mountain Home to Anderson Ranch	8	68.0–70.0	

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

Proponent	Project	Gateway Segment	Gateway Proposed Route Mileposts (parallel)	Gateway Proposed Route Milepost (crossed)
Idaho Power	230-kV Boise Bench to Mountain Home	8	68.0–86.0	
Idaho Power	138-kV Mountain Home to Lucky Peak	8	68.0–86.0	
Idaho Power	138-kV Glens Ferry Cogeneration to Mountain Home	8	54.5–62.5	
Idaho Power	138-kV Bowmont to Tap	8		113.6
Idaho Power	138-kV Hunt to Tap	10		17.9
Idaho Power	138-kV Tap to Tap	10		17.9
Idaho Power	345-kV Midpoint to Adelaide	10	0–1.2	
Idaho Power	230-kV Hunt to Midpoint	10	0–11.5, 16.0–17.9	
Idaho Power	138-kV Tap to Hunt	10		18
Idaho Power	138-kV Hunt to Eden	10	17.9–23.2	
Idaho Power	230 kV AC Hemingway-Bowmont	8	last mile	

Source: Ventyx 2010

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.

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 4A and 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 the Gateway West Project. 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		Comments
			Segment/ Alternative	Mileposts	
Kinder Morgan Canada	20	Crude	1W(a)	1.5-7.4	Crosses Segments 1W(a), Alt 1W-A, 1W(c), 1E, and Alt 1E-A
Colorado Interstate Gas Company	24	Natural Gas	2, 2A, 3, 4	12.7-14.3 (Alternative 2 Alt2A); 41-61 (Segment 2); 29.8-46.6 (Segment 3); 0-5.4 (Segment 4)	Crosses Segment 2,3
Rockies Express Pipeline LLC	42	Natural Gas	2	12.7-15.2, 41-61 (Segment 2)	Crosses Segment 2
Wyoming Interstate Limited	36	Natural Gas	2, 3, 4	29.8-61 (Segment 2); 29.8-46.6 (Segment 3); 0-5.4 (Segment 4)	Crosses Segment 3
Rockies Express Pipeline LLC	36	Natural Gas			Crosses Segment 3
ExxonMobil Pipeline Company	20	Crude			Crosses Segment 4

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

Operator	Diam. (in)	Product Transported	Parallels Gateway		Comments
			Segment/ Alternative	Mileposts	
Rocky Mountain Pipeline System LLC	16	Crude			Crosses Segment 4
Chevron Corporation	16	Crude	4, 4A, 4F	61.3–67.9 (Segment 4); 9.3–18.5 (Alternatives 4A,4F)	Crosses Segments 4, 4A, 4B, 4C, 4D, 4E, 4F
Williams Northwest Pipeline	26	Natural Gas	4B,4C, 4D, 4E	36–45 (Alternatives 4B, 4C, 4D, 4E); 52-59 (Alternatives 4B, 4C)	Crosses Segment 4 and Alternatives 4C, D, and E
Williams Energy Services LLC	30	Natural Gas			Crosses Segment 4 and Alternatives 4A, 4B, 4C, 4D, 4E, 4F
Williams Northwest Pipeline	24	Natural Gas	7, 8, 8A	60–65 (Segment 7); 36.2–47.5 (Alternative 8A); 10–17 (Alternative 8B); 24–36.4 (Alternative 9B)	Crosses Segment 5, Alternatives 5D & 5E, Segment 7, Alternatives 7C & 7D, Segment 8, Alternative 8A & 8B, Alternative 9B, and Segment 10.

Source: Ventyx 2010

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

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

Transmission Line Segment/Alternative	Length (Miles) ^{1/}	Mileposts Paralleled ^{2/}
Segment 1E	100.6	2.7–6.2
Alternative 1E-A	16.1	2.4–4.9
Alternative 1E-B	59.3	4–6.4
Alternative 1E-C	48.7	20.3–34.1
Segment 1W(a)	76.5	48.2–62
Alternative 1W-A	16.2	2.7–4.2
Segment 1W(c)	70.6	1.4–4.4; 42.5–56.4
Segment 2	96.7	6.6–8.6; 16–34.3; 42–46.7
Alternative 2A	28.4	0–4.6
Segment 3	56.5	31.9–46.6
Segment 4	203.0	21.3–28.2; 53–58; 86.5–89.8; 197–199
Alternative 4A	85.2	1–6.0;
Alternatives 4B, 4C	100.2, 101.6	55–60; 64–66; 68–72
Alternative 4D	100.8	64.5–67; 68.5–72
Alternative 4E	102.2	64.5–83.5
Segment 5	54.6	No Parallel Roads
Alternative 5C	26.1	0.5–6.5
Segment 7	118.1	22.9–24.5; 67–70.4
Alternative 7H	127.4	75.5–82
Segment 8	131.0	57–58; 88.2–91; 123.8–124.8; 125.9–128.5;
Alternative 8A	53.6	0.3–4.8;
Alternative 8B	45.8	2.4–6.5; 21.4–23.8; 40–43; 44.3–45.1
Segment 9	161.7	103–104.5; 106.8–108; 136–152
Alternative 9E	68.7	150–151.2
Segment 10	33.6	15–19

1/ Mileages are rounded to the nearest tenth of a mile.

2/ Within 1 mile of route centerline.

Source: ESRI 2009

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.

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 17 operating coal-fired power plants in the Analysis Area (3 in Idaho and 14 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 Segments 1E and 1W(a) begin; 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)
Jim Bridger	PacifiCorp	2,120 MW	Y	Sweetwater County near Bridger 500-kW Substation
Naughton	PacifiCorp	700 MW	Y	Lincoln County near town of Kemmerer
Green River Wyoming	General Chemical Soda Ash Partners	30 MW	Y	Sweetwater County
Laramie River	Basin Electric Power Coop	1,710 MW	N	Platte County
Neil Simpson 1	Black Hills Power Inc.	22 MW	N	Campbell County
Neil Simpson 2	Black Hills Power Inc.	120 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

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

Project	Proponent	Production Capacity	County Crossed by Gateway	General Location
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 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.

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.

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	Energy Vision, LLC	21	Elmore
Burley Butte	Exergy	19.5	Cassia
Camp Reed Wind Farm	Exergy	22.5	Elmore
Cassia Gulch Wind Park	Cassia Gulch Wind Park, LLC	19	Twin Falls
Cassia Wind Farm	Cassia Wind Farm, LLC	30	Twin Falls
Fossil Gulch Wind Park	Exergy Development Group, LLC	11	Twin Falls
Golden Valley Wind Park LLC	Exergy Development Group, LLC	11	Cassia
Goshen North Project	BP Wind Energy / Ridgeline	83	Bonneville
Hot Springs Windfarm	Energy Vision, LLC	21	Elmore
Milner Dam Wind Park	Exergy Development Group, LLC	20	Cassia
Mountain Home	John Deere Wind	42	Elmore

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

Project	Proponent	Production Capacity (MW)	Location
Oregon Trail Wind Park LLC	Exergy Development Group, LLC	13.5	Twin Falls
Paynes Ferry Wind Farm	Exergy Development Group, LLC	21	Twin Falls
Pilgrim Stage Station Wind Farm	Exergy Development Group, LLC	11	Twin Falls
Salmon Falls Wind Park LLC	Exergy Development Group, LLC	21	Twin Falls
Thousand Springs Wind Park LLC	Exergy Development Group, LLC	11	Twin Falls
Tuana Springs	John Deere Wind	17	Twin Falls
Wolverine Creek Energy (Goshen Wind)	Ridgeline Airtricity Energy LLC	65	Bonneville
Yahoo Creek Wind Farm	Exergy Development Group, 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	Unita
Mountain Wind Energy Center II (Bridger Butte)	Mountain Wind Power, LLC	80	Unita
Natrona County Wind Farm	Chevron Global Power Co.	17	Natrona
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
Top of the World - Siemens	Duke Energy North America	101	Converse
Wyoming Wind Energy Center	NextEra Energy Resources	144	Unita

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
Black Canyon	U.S. Bureau of Reclamation	10	Payette River
Bliss	Idaho Power	80	Snake River
Brownlee	Idaho Power	728	Snake River
Bypass Hydro	Bypass, Ltd.	10	Bypass Canal
C.J. Strike	Idaho Power	89	Snake River
Cabinet Gorge	Avista	265	Clark Fork River
Cascade	Idaho Power	14	Payette River
Dworshak	USACE Portland District	400	North Fork Clearwater River
Gem State Hydroelectric	Idaho Falls Electric Light Division	23	Snake River
Grace	PacifiCorp	33	Bear River
Hells Canyon	Idaho Power	450	Snake River
Lower and Upper Malad	Idaho Power	24	Malad River
Lower Salmon	Idaho Power	54	Snake River
Lucky Peak Power Plant Project	Boise-Kuna Irrigation District	101	Boise River
Milner	Idaho Power	60	Snake River
Minidoka	U.S. Bureau of Reclamation	28	Snake River
Oneida	PacifiCorp	30	Bear River
Oxbow Dam	Idaho Power	220	Snake River
Palisades	U.S. Bureau of Reclamation	176	South Fork Snake River
Post Falls	Avista	15	Spokane River
Shoshone Falls	Idaho Power	13	Snake River
Smith Creek	Eugene Water & Electric Board	38	Little Wood River
Smith Falls Hydroelectric Project	Smith Falls Hydropower	38	Smith Creek, ID
Soda	PacifiCorp	14	Bear River
South Forks Hydro	Ida West Energy Co.	8	Twin Falls Canal Company irrigation canals
Swan Falls	Idaho Power	25	Snake River

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

Project	Proponent	Production Capacity (MW)	Waterbody
Twin Falls	Idaho Power	53	Snake River
Upper Salmon Falls A	Idaho Power	70	Snake River
Upper Salmon Falls B	Idaho Power	39	Snake River
Wyoming			
Alcova	U.S. Bureau of Reclamation	41	North Platte River
Boysen	U.S. Bureau of Reclamation	15	Wind River
Buffalo Bill	U.S. Bureau of Reclamation	18	Shoshone River
Fontenelle	U.S. Bureau of Reclamation	10	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	36	North Platte
Seminole	U.S. Bureau of Reclamation	52	North Platte

Source: Platts 2009; IPC 2011; Bureau of Reclamation 2011

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 Governor’s 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 Co	16	Pocatello
Magic West - Glens Ferry	Idaho Power Co	10	Elmore Co.
Potlatch Corporation	Avista Corp	113	Lewiston
Renewable Energy of Idaho	Idaho Power Co	18	Gem Co.
Rupert Cogen	Idaho Power Co	10	Minidoka Co.
Simplot Pocatello	Idaho Power Co	12	Power

Existing 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 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.

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								
2	8.2	14.8	–	–	–	–	–	–
	68.1	71.9	–	–	–	–	–	–
	84.2	85.0	–	–	–	–	–	–

Table 4.2-10. Existing Non-Renewable Resource Extraction Activities (continued)

Proposed Route	Mileposts Crossed		Route Alternative	Mileposts Crossed		Route Alternative	Mileposts Crossed	
	Min.	Max.		Min.	Max.		Min.	Max.
3	40.9	43.0	–	–	–	–	–	–
3a	4.4	5.5	–	–	–	–	–	–
4	3.9	4.9	–	–	–	–	–	–
	44.4	51.8	4B,C,D,E	48	48.7	–	–	–
	54.1	54.3	4A,F	54.1	54.3	4B,C,D,E	2.2	11.4
Trona								
1E	–	–	Alt 1E-B	39.6	42	–	–	–
4	40.3	64.6	4A,F	0	12.5	4B,C,D,E	0	15.6
Coal								
2	2	24.6	–	–	–	–	–	–
	79.7	85.4	–	–	–	–	–	–
	95.2	96.6	–	–	–	–	–	–
3	0.0	18.7	–	–	–	–	–	–
4	7.9	23.7	–	–	–	–	–	–
	–	–	4A,F	42.2	45.8	4B,C,D,E	41.2	44.9

Source: BLM and Forest Service no date

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

Segment	Active	Inactive	Total
1E	73	117	190
1W	83	120	203
2	737	136	873
3	674	174	848
4	1,018	126	1,144

Source: Wyoming Oil and Gas Conservation Commission 2010

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.

4.2.1.7 Existing Residential, Commercial, and Industrial Developments

Please see Section 3.18 – 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 and by either the Segment 1E Proposed Route or Alternative 1E-C. The Caribou-Targhee NF would be crossed by Segment 4 Proposed Route where no alternatives are proposed.

The Sawtooth NF would be crossed by Alternatives 7H and 7I, and would need to be crossed by 7I if 7J were selected. 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 and for fire management, salvage timber sales, and recreation trail maintenance.

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

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

Segment 1, Proposed Routes 1W(a), 1W(c), and 1E, and Alternative 1E-C.

Projects listed in the Douglas and Thunder Basin Ranger District SOPA for April 1, 2011³.

- **North Laramie Range Aspen Restoration:** Treatments aimed at regenerating select aspen stands and associated habitat. Laramie Peak Unit, approximately 6 miles east of Segment 1E. Planned for 2011.

Caribou-Targhee NF, Montpelier Ranger District

Segment 4.

Projects listed in the Caribou-Targhee SOPA for April 1, 2011⁴:

- **Main Canyon Vegetation Management Project:** 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, within the proposed Gateway West Project area. Planned for 2012.
- **Strawberry Aspen Treatment:** Use prescribed fire and mechanical thinning to reduce conifer encroachment in aspen forest (1,400 acres), improving wildlife habitat and reducing fuel loading in the 2,600-acre project area, within 5 miles of the Gateway West Project area. Planned for 2012.
- **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 2012.

Sawtooth NF, Minidoka Ranger District

The April 1, 2011, SOPA for the Sawtooth NF⁵ lists several activities planned that are within the Analysis Area for Alternatives 7H, 7I, and 7J. These are:

³ <http://www.fs.fed.us/sopa/components/reports/sopa-110206-2011-04.pdf>

⁴ <http://www.fs.fed.us/sopa/components/reports/sopa-110415-2011-04.pdf>

For Alternatives 7H, 7I, and 7J:

- **Wildlife Conservation Strategy:** The Sawtooth NF is developing short- and long-term management strategies and priorities for maintaining and restoring habitats associated with terrestrial wildlife species. This strategy, when completed, will constitute a forest plan amendment and will help define standard mitigation measures for large projects that cross the Sawtooth. However, it is in the early planning stages and no documentation is yet available to consider for cumulative effects.
- **Sublett Fuels-Vegetation project:** This project encompasses treatment of selected aspen and Douglas-fir stands on approximately 3,373 acres of the Sublett Division, which would be crossed by any of Alternatives 7H, 7I, and 7J. Implementation is expected no earlier than 2012.

For Alternative 7I:

- **ENXCO temporary meteorological towers for wind energy evaluation:** These towers will be located, if approved, in Section 25, T14S, R19E, and Section 15, T15S, R19E. Implementation is expected in 2011. These sections are not crossed by any of the alternatives. The towers themselves would therefore have no direct or indirect cumulative effect when considered together with the impacts from Alternatives 7I.

Kemmerer FO

The Kemmerer FO has identified six ongoing or foreseeable commercial timber projects:

- **Van Tassel Post and Pole Boundary:** In-progress timber sale harvest of mainly dead lodgepole pine post- and pole-size trees.
- **Tokewana Timber Sale:** In-progress timber sale harvest of mainly dead lodgepole pine (estimated through October 2013).
- **Proposed Aspen Front:** Removal of competing subalpine fir from aspen stands and salvage of dead lodgepole pine (planning process).
- **Proposed Commissary White Bark Sanitation Project Area:** Removal of competing subalpine fir from whitebark pine stands (planning process).
- **Proposed Little Beaver Thinning:** Douglas fir thinning (pre-planning process)
- **Proposed Wheat_Creek Aspen Treatment:** Removal of competing subalpine fir from aspen stands (pre-planning process).

Conifer forests would be removed in areas where the Proposed Route and Route Alternatives cross these projects. The proposed Aspen Front project is crossed by Segment 4 (54 acres cleared during construction) and Alternative 4F (26 acres cleared during construction). The proposed Commissary White Bark Sanitation project would be crossed by Segment 4 (1 acre cleared during construction). The proposed Wheat Creek Aspen Treatment project is also crossed by Segment 4 (1 acre cleared during

⁵ <http://www.fs.fed.us/sopa/components/reports/sopa-110414-2011-04.pdf>

construction). The proposed Little Beaver Thinning project is located 2 miles south of Alternative 4A and the Van Tassel Post and Pole Boundary project and Tokewana Timber Sale are both more than 45 miles south of Alternatives 4B, 4C, 4D, and 4E. 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 2006b), 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 (Swan 2010). However, on the Pocatello FO there are two upcoming salvage sale areas, scheduled for summer 2011. One is approximately 59 acres, located approximately 0.5 mile north of Alternative 5A. The other is approximately 56 acres and is crossed by Alternatives 7B and 5B. Alternative 7B would impact approximately 0.3 acre of conifer forest in this area and Alternative 5B would impact 5.2 acres. 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.

4.2.2.1 Needed Studies to Support NEPA and Engineering Analysis

The Proponents of the Gateway West Project 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 with no identified alternatives but will likely request additional permission to conduct further studies as a preferred alternative is identified by the agencies. 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 the Gateway West Project. They were therefore evaluated under a separate NEPA process and approved after a Finding of No Significant Impact was signed by the BLM Authorized Officer.

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 Gateway West 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 Gateway West 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

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	Las Vegas, NV	2	all	Depending on alternative chosen, the Gateway South line could parallel (but located about 5 miles south of) Segments 2 and 3 of the Gateway West Project, between the Aeolus and Creston Substations.
							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	1E	0–1	Leaves from Windstar, heads away from Segment 1E immediately.

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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	
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.
Overland Intertie	Jade Energy Associates (subsidiary of LS Power)	500 kV AC or DC	560	2015	Chugwater, WY	Midpoint Substation, ID	2,3,4,5,6,7	all	Planned to be located up to 1,500 feet off existing lines (including proposed route for Gateway West).
Southwest Intertie Project (SWIP), north portion	Great Basin Transmission (subsidiary of LS Power)	500 kV AC or DC	515	2015	Midpoint Substation, ID	Southern NV	10	all	Second open season announced April 15, 2009. It is likely that only one line will be built—either SWIP or Segment 10—but no agreement has been signed.
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 the Gateway West Project, 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	1E	0	Comes into Windstar.
							1W		

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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	
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, 1E	all	This project would collect and aggregate wind power from multiple points in the U.S. and Canada.
Wyoming-Colorado Intertie Transmission Project (WCI)	Trans-Elect; Western Area Power Administration; Wyoming Infrastructure Authority	345 kV AC	180	2014-2015	Laramie River Substation, WY	Pawnee Substation, CO	1E	0	Approaches the Gateway West Project at the Windstar Substation along Segment 1E.
Zephyr Project	TransCanada	500 kV DC	850	2015	Aeolus Substation, WY	Las Vegas, NV	2 3 4 5	all	Planned to establish a converter AC-DC station at Borah.

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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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 operation.

There are several lines that would parallel Gateway West for a substantial distance. LS Power's Overland Intertie (presently on hold) would parallel Gateway West for the longest distance, sharing a corridor from Aeolus to Midpoint, a distance of over 500 miles. Based on the WECC criteria for common corridor, one or more of these lines may require 1,500 feet or more separation from Gateway West. TransCanada's proposed Zephyr line (presently on hold) would parallel Gateway West from Aeolus to Borah, a distance of about 310 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 for Gateway West.

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 two proposed coal-fired power plants in the Analysis Area, both in northeastern Wyoming (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)
Idaho			
None			

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 two natural gas-fired power plants proposed within the Analysis Area, both of which are in Idaho (Figure E.24-3, Appendix E). The Gateway plant, operated by Mountain View Power, Inc., is a 180-MW plant that would be located north of Segment 8 in Ada County. The Wendell Plant, operated by the EnviroDyne Corporation, would be a 12-MW plant located along Segment 7 in Gooding County. 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.

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 4.2-14. 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 4.2-14. Proposed Geothermal Projects in Idaho

Project	Proponent	Production Capacity	Phase of Development^{1/}	Location
Crane Creek	Agua Caliente	175 MW	1	Washington County
Idaho Falls	Idatherm LLC	100 MW	1	Bingham and Bonneville County
Raft River Expansion	U.S. Geothermal	32 MW	3	Southern Cassia County
Preston Area	Idatherm LLC	50 MW	1	Unknown
Soda 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 25 proposed wind energy facilities in Idaho, ranging in size from 11 MW to 450 MW (Table 4.2-15) 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 4.2-15) 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). Note that this wind farm is located in mapped sage-grouse core area, which has been declared by the Wyoming Governor in EO 2011-5 to be incompatible with wind development, but the proposal is still current. New wind projects will require clearing for turbine pads, access roads, and associated facilities.

Table 4.2-15. Proposed Wind Energy Facilities in Idaho and Wyoming

Project	Proponent	Production Capacity (MW)	Location
Idaho			
Alkali	Rick Koebbe	18	Elmore
Alpha Wind	Alpha Wind LLC	29.9	
American Falls	Ridgeline-Airtricity	200	Power
Black Canyon Rim	Intermountain Wind	20	Bonneville
Bravo Wind	Bravo Wind LLC	29.9	
Cedar Creek Wind	Western Energy Corp.	199	Bingham
Charlie Wind	Charlie Wind LLC	27.6	
China Mountain Wind	RES America Developments, Inc.	425	Twin Falls and Owyhee, ID and Elko, NV
Cotterel Mountains Wind	Windland, Inc.	200	Cassia
Delta Wind	Delta Wind LLC	29.9	
Echo Wind	Echo Wind LLC	29.9	
Goshen South / Wolverine Canyon	Ridgeline Energy / BP Wind Energy	450	Bingham
Grouse Creek Wind Park	Wasatch Wind	21	
Grouse Creek Wind Park II	Wasatch Wind	21	
Horse Butte Wind Project	Utah Associated Municipal Power Systems	58	Bonneville
Lava Beds Wind Park LLC	Exergy Development Group, LLC	18	Bingham
Magic Wind Park	Magic Wind Park, LLC	20	Twin Falls
Notch Butte Wind Park LLC	Exergy Development Group, LLC	18	Lincoln
Rockland Wind Farm	Ridgeline Energy, LLC	300	Power
Schwendiman Family Wind	Schwendiman Wind, LLC	20	Bonneville
Sawtooth Wind	Idaho Winds LLC	21	Elmore
XRG-DP-10	XRG	10	Cassia
XRG-DP-7	XRG	20	Cassia
XRG-DP-8	XRG	20	Cassia
XRG-DP-9	XRG	20	Cassia
Wyoming			
Black Mountain Wind Project	Wasatch Wind Intermountain, LLC	109	Natrona
Chokecherry Wind Farm	Power Co. of Wyoming	1,350	Carbon
Pioneer Wind Park	Wasatch Wind	100	Converse
Sierra Madre Wind Farm	Power Co. of Wyoming	650	Carbon
Bridger Butte Wind Project	Mountain Wind Power, LLC	240	Uinta
Chugwater Flats Energy Project	Novelution Wind	215	Platte County
White Mountain Wind	Teton Power, LLC	350	Sweetwater

Sources: AWEA no date; Ventyx 2010; WDEQ 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 2010a). 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 2010b): “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 (Western) to develop a map of constraints for transmission in that same southeast corner of Wyoming (ICF 2010c). 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 Wyoming Infrastructure Authority (WIA) and Western, 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 2010b). 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.

Wind projects are still in development in Wyoming, but many appear to be on hold (see Table 4.2-15, above). According to AWEA, an industry association, there are 1,412 MW of installed capacity in Wyoming, of which 310 MW were added in 2010⁶. Several projects were located in areas with good wind resources but also in areas listed by the State of Wyoming as Core Habitat for sage-grouse, where the Governor of Wyoming has stated (EO 2011-5) that wind development is inappropriate⁷. It is therefore not clear

⁶ <http://www.awea.org/learnabout/publications/upload/1Q-11-Wyoming.pdf> accessed 6/7/2011

⁷ <http://governor.wy.gov/Documents/Sage-Grouse%20EO.pdf>

how much wind energy will be developed in Wyoming, or where that development will occur.

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 six 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.⁸

According to FERC,

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.

⁸ <http://elibrary.ferc.gov/IDMWS/common/opennat.asp?fileID=12424750> accessed 6/7/2011

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).⁹

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 June 7, 2011, 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 capacity¹⁰. Table 4.2-16 lists the pre-permit approvals as of June 7, 2011, in Idaho and Wyoming.

Table 4.2-16. Pumped Storage Projects with 3-year Pre-Permits Approved

Docket Number	Project Name	Licensee	Waterway	State	Authorized Capacity KW	Issue Date	Expiration Date
13303	Little Potlatch Creek Pumped Storage	BPUS Generation Development LLC	Clearwater River	ID	1,340,000	02/06/09	01/31/12
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
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

Source: <http://www.ferc.gov/industries/hydropower/gen-info/licensing/issued-pre-permits.xls> (accessed 6/7/2011)

⁹ <http://www.ferc.gov/industries/hydropower/gen-info/regulation/pump.asp#skipnav> accessed 6/7/2011

¹⁰ <http://www.ferc.gov/industries/hydropower/gen-info/licensing/pending-pre-permits.xls> accessed 6/7/2011

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.¹¹ 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.

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

There are no solar facilities proposed for construction in Wyoming; however, one facility (the Mid Point Energy facility) is proposed for construction in Jerome County, Idaho. This solar facility (as currently proposed) would encompass about 405 acres of land, consist of about 150,000 solar panels, and could generate 75 MW of energy (Magic Valley Times-News 2010; SIEDO 2010). In the 12 months since the initial announcement, no further progress has been documented and it is likely that the project is on hold.

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., 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. The Creston Substation is proposed in part to serve a future load from oil and gas extraction both north and south of the proposed Gateway West transmission line in the areas of Segments 2 and 3.

¹¹ http://www.energyprospects.com/cgi-bin/package_display.pl?packageID=3499 (accessed 6/7/2011)

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 and other proposed developments. Exact details of the proposed developments 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 3.17-10.

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, salvage timber harvest, and road maintenance and decommissioning. 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, paleontologic 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, paleontologic 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, paleontologic 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, paleontologic 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, paleontologic 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, paleontologic 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, paleontologic 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 the Gateway West Project, 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 the Gateway West Transmission Line Project 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 the Gateway West Project is not permitted, the demand for transmission services to which its purpose and need refers would not be met with this Project and would have to

turn to other proposals. 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 Gateway West 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. Segment 1E also crosses landscapes without existing high-voltage transmission lines for 88 miles. 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 existing 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 parks, 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.

The Segment 1E Proposed Route or Alternative 1E-A would be the first high-voltage transmission line crossing much of the area south of I-25 other than the existing 230-kV line proposed for reconstruction as part of Segment 1W. In this general area there are two proposed transmission lines: the High Plains Express and the Wyoming-Colorado Intertie, which may parallel a portion of the Segment 1E Proposed Route or Alternative 1E-A for a short distance before heading southeast. Wasatch Wind has proposed the 100-MW Pioneer Wind Farm in the area, located south of Glenrock and outside of designated core area.

In the Windstar area, the combination of the Gateway West Segment 1W(a) and 1E new 230-kV lines, 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 1.

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. While the former corridor type would accommodate Segment 1W, the Proposed Route for Segment 1E and the Alternative 1E-C are outside that corridor for portions of each of those routes. Alternative 1E-C can feasibly be adjusted for about 7 miles to fall within the corridor, but the Segment 1E Proposed Route cannot be feasibly made to conform to EO 2011-5 from MPs 57 to 80. 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. Alternative 1E-B would be consistent with EO 2011-5 (after a minor adjustment where the Proposed Route in Segment 1E departs from the Segment 1W[c] Proposed Route) and it is possible that future projects could follow that alignment if they stayed to the east of that 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, four additional transmission lines have been proposed—Gateway South, TransWest Express, TransCanada's Zephyr line (presently on hold), and LS Power's Overland Intertie (presently on hold), 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 Gateway West Project. If all the transmission lines were to be located south of the I-80/U.S. 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 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, Overland Intertie and Zephyr (both presently on hold) would continue, probably following the route selected by the BLM (as yet undetermined) for the Gateway West Project, 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 two other proposed transmission lines would comprise the bulk of development and that adding three 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. Alternative 4A 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 both of the additionally proposed transmission lines.

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 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 Overland Intertie and Zephyr projects (both presently on hold). 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 character.

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.

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 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 other transmission lines, there are three existing wind farms (total of 60 MW) and nine proposed wind farms (127 MW proposed in eight wind farms and 425 MW proposed for China Mountain, part of which is proposed for Elko County, Nevada).

If Alternative 7I is chosen and a transmission corridor 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. Similar to the Proposed Route, a major transmission corridor would be established in an area that does not now have any transmission lines. There would be fewer viewers in the more remote area along the boundary between Idaho and Nevada, but 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 either Alternative 7I or 7H and the presence of important historic resources for which setting is an crucial component.

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 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.

The Gateway West Project 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.

Because Gateway West would have both adverse visual impacts (as defined in 36 CFR 800.5[a]) and possible noise impacts on the setting for historical trails where it crosses, establishment of a corridor would increase visual and noise impacts in settings of NHTs and other historic properties. 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, Zephyr, and Overland Intertie). Most of the proposed transmission lines would require a federal ROW grant, thereby triggering consideration of impact to historic properties and mitigation of adverse impacts 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. Alternative 4A is 1,500 feet to the northeast of the existing transmission 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 both of 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 Gateway West Project, when taken together with the other projects, would be significant. 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 significant 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 the Gateway West Project 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 Gateway West Project and result in cumulative impacts include 1) current construction projects that would continue through 2011 and beyond, or 2) reasonably foreseeable actions that would be in construction between September 2011 and December 2018, 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 1.9 percent of the existing 2009 populations for the affected counties. These potential impacts and associated cumulative effects would be short-term and temporary. Operation of the Gateway West Project would require an estimated permanent staff of approximately 12 employees, all of whom are expected to be hired locally. As a result, the Gateway West Project 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 Gateway West 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 Gateway West 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 Gateway West 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. As described in Section 3.4.3, the Proponents would prepare a housing plan (SOC-1) that adequately demonstrates mitigation of any projected housing shortages during construction. This plan would take into account other projected demands for housing resources that are likely to exceed typical baseline demand. In Wyoming, the ISC will likely 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 Gateway West 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 Gateway West Project could add cumulatively to this demand. These potential cumulative effects would be short-term and temporary.

Construction of the Gateway West 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 \$53.7 million for Wyoming and \$39.4 million for Idaho. In Wyoming these estimated revenues would be divided between the state and county of origin and would be equivalent to about 14.8 percent of total state and local sales and use tax revenues in 2008 (Table 3.4-30). In Idaho, projected sales and use tax revenues would be equivalent to about 0.2 percent of the state total in 2008 (Table 3.4-31). 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 0.2 percent (Natrona County) to 4.7 percent (Carbon County) of total ad valorem tax revenues in the affected counties in 2008. In Idaho, projected property tax revenues would range from 0.1 percent (Ada County) to 21.1 percent (Bear Lake County) of 2008 property tax revenues. Operation 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.

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 with additional losses assumed from foregone permit and utility fees (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 3.17-10). 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.

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 discussion). Grazing, which is prevalent along Gateway West 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 the Gateway West Project would pass to small and often discontinuous patches. While the impact of the Gateway West Project would be minor compared to the much larger past events, when taken together with various proposed developments as specified earlier 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 1E, 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. These are the only segments where the Project may impact sensitive plant species, and therefore are the focus of the cumulative effects discussion. As for general vegetation (Section 4.4.6), 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 the Gateway West Project 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 the Gateway West Project would not vary by alternative. Although the Gateway West 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 Gateway West 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 proposed by the Proponents and the additional mitigation measures required or recommended by the Agencies, the potential spread of existing weed populations would likely be decreased. It is assumed that additional new construction activities would carry similar 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 Project 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, which comprise a minor portion of the total. 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 Gateway West Project in Wyoming, and there are also leases and private land grazing along part of the route in Idaho.

Regardless of the Route Alternative chosen, 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 the Gateway West transmission line and associated facilities would occur in areas that have already been altered by infrastructure development, natural resource extraction activities, and other development, all of which may 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, and other projects requiring federal permits, would be located to minimize impacts to important habitats and particularly to waterbodies, there is 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 the Gateway West Project, 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 Wyoming Infrastructure Authority 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 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 and 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, 1E, 1E-A	3-8 (1W); 0-2, 7-20 (1E); 10-12 (1E-A)	-transmission line	-transmission (WTI, 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, 1E-C	15-21 (1W); 43-49(1E-C)	-transmission line	-transmission (NLI)
			-active oil and gas wells	
			-State Highway 253	
Pronghorn	1W, 1E, 1E-C	50-60 (1W); 72-79 (1E); 29-35(1E-C)	-transmission line	-transmission (SWM, NLI)
			-active oil and gas wells	
			-U.S. 30, State Highway 77	
Mule deer and Pronghorn (2 overlapping units)	1W, 2, 1E, 1E-C	68-72 (1W); 0-8 (2); 82-87 (1E); 48-49 (1E-C)	-transmission line	-transmission (GWS, OI)
			-active oil and gas wells	-non-renewable resource extraction
				-wind energy (pending/authorized)
				-platted subdivisions
Mule deer	1E-A	19-24	-transmission line	-transmission (WCI, HPE)
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, OI)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	
			- U.S. 287	

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	2	48-55	-transmission line	- transmission (ZE, TWE, OI)
			- I-80	-non-renewable resource extraction
				-wind energy (pending)
Pronghorn	2	66.5-71	-transmission line	- transmission (ZE, TWE, OI)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	
			-I-80	
Mule deer	3, 4, 4A, B, C, D	19-45(3); 0-1, 5-16, 20-21, 25.5-31.5, 52-58 (4); 0.5-6.5 (4A); 1-5 (4B, C, D, E)	-transmission lines	-transmission (GS, NLI, SWM, ZE, TWE, OI)
			-active oil and gas wells	-non-renewable resource extraction
			-non-renewable resource extraction	-authorized wind
			- I-80, U.S. 191, State Highway 377	-Jim Bridger expansion
			-existing residential/commercial (Green River, Rock Springs)	
Pronghorn	4, 4B, 4C, 4D, 4E	84-86 (4), 15-23 (4B, C, D, E)	-transmission lines	-transmission (ZE, TWE, OI)
			-active oil and gas wells	-non-renewable resource extraction
			-I-80, U.S. 30, State Highway 530	
			-existing residential (Kemmerer)	
Pronghorn	4, 4A	105.5-107 (4); 53-55 (4A)	-transmission lines	-transmission (ZE, TWE, OI)
			-active oil and gas wells	-non-renewable resource extraction
Moose, elk, mule deer (3 overlapping units)	4, 4A, 4B, 4C, 4D, 4E	119-128 (4); 63.5-71 (4A); 64-72 (4B, 4D); 64-84 (4C, 4E)	-transmission lines	-transmission (SWM, ZE, TWE, OI)
			-U.S. 30	-non-renewable resource extraction
				-wind energy (pending)
Mule deer	4, 4A, 4B, 4C, 4D, 4E	132-137 (4); 82.5-85 (4A); 97-100 (4B, 4C, 4D, 4E)	-transmission lines	-transmission (ZE, TWE, OI)
			-U.S. 30	-non-renewable resource extraction
Elk	4	144-147	-transmission line	-transmission (SWM, NLI, ZE, TWE, OI)
			-U.S. 30	-non-renewable resource extraction

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/}
Mule deer	5, 5c, 5e 7	7-9 (5); 0-1 (5c); 7-8 (7)	-transmission lines	-transmission (SWM, NLI)
Mule deer	5, 5a, 7, 7A	19-20 (5); 12-13 (5a); 19-21(7), 12-13)	-transmission lines	-transmission (NLI, ZE, TWE, OI)
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 -U.S. 15	-transmission (SWM)
Mule deer	7C	4-6		
Mule deer	7, 7g, 9	154-157 (7); 1-3 (7g); 0-9 (9)	-transmission line	-transmission (SWI, SWM) -wind energy (pending/authorized)
Mule deer	8, 8a	0-1 (8 and 8a)	-transmission line -US 26	-transmission (SWM) -Notch Butte wind park
Mule deer	8	24-25	-transmission lines -Interstate 86, State Highway 30	-transmission (NLI)
Parturition Units				
Elk	4, 4f	110-112, 120-125 (4); 58-60, 63-69 (4f)	-transmission lines	-transmission (SWM)

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

2/ Transmission lines: WCI (Wyoming to Colorado Intertie), HPE (High Plains Express), ZE (Zephyr), SWM (Southern Wyoming to Market Place), NLI (Northern Lights Inland), TWE (Transwest Express), OI (Overland Intertie), GS (Gateway South), SWI (Southwest Intertie)

4.4.11.3 Migratory Birds and Raptors

Effects of the Gateway West Project 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 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 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. 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. The additional disturbance and operational effects associated with Gateway West would not result in measurable cumulative effects to raptors, regardless of the route chosen.

Two hundred thirty (230)-kV and 500-kV transmission lines, such as those proposed by Gateway West and others, offer no 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 1 to 3 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 migratory bird deaths from collision.

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. The Gateway West Project would not have a measurable adverse effect on migratory bird populations or significant bird conservation sites but would have a small adverse effect on migratory bird habitats and ecological conditions through vegetation removal, fragmentation of native habitats, and possible increases in predation pressure due to adding perching substrate for avian predators and adding service roads sometimes used by canid predators. When taken together with the existing substantial habitat loss caused by past 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 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 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 1E, 1W, 5, 8, 9, and 10. Nests have been identified along Segments 1E, 1W, 2, 4, and 5. Transmission lines are proposed for construction in these areas, in addition to the Gateway West Project (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 Gateway West 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, Idaho, or Nevada. 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*)

Black-footed ferret non-block cleared areas, which comprise suitable habitat for the species, occur along Segments 2, 3, and 4. 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 (habitat in Segments 2 and 4), major roads (I-30 through habitats in Segments 2 and 3), and transmission lines (habitat in Segments 2, 3, and 4). In addition, there is a dense concentration of oil and gas wells in these non-block areas, as well as existing mining leases. 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/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 Section 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/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 the Gateway West Project. Potential effects of the Gateway West Project 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/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 Gateway West 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. Only Segment 4 of the Project crosses lynx habitat. The Project would not cross critical habitat for lynx, but would cross one LAU south of the mapped critical habitat in the Bridger-Teton NF on BLM-managed lands in the Kemmerer FO in Wyoming. The Proposed Route for Segment 4 would cross 10.3 miles of this LAU, causing 149 acres of habitat loss. Alternative 4F would cross 4.5 miles of the LAU with less than half that amount of habitat loss, out of an LAU of 2,204,851 acres. The amount of habitat loss is very small from Gateway West, though it is accompanied by habitat fragmentation, introduction of permanent service roads, the potential for additional access for OHV recreationists, and impacts to lynx linkage habitat. Construction and operations of the Project is 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. There are no existing transmission lines in the vicinity of the proposed LAU crossing, but two additional proposed transmission lines, the Zephyr and the Overland Intertie, may follow the Gateway West alignment though the LAU at a 1,500-foot offset from each. A very small portion of the LAU (south of Segment 4) is pending authorization for wind energy development. Such development could result in the additional removal of forested habitat. Future timber management activities may be authorized within the LAU.

Past 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 crossed by the Proposed Route and Alternative 4F is at the southern end of 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. Because the Project would only cross lynx habitat along the Proposed Route of Segment 4 and one Route Alternative, and no Route Alternative currently considered would result in the complete avoidance of this habitat, cumulative effects on the Canada lynx would not differ substantially by alternative. Because the lynx is listed as

threatened, Gateway West's minor impacts, when taken together with other past, present, and future actions, may be considered an additional increment to an already considerable cumulative effect.

4.4.12.6 Colorado and Platte River Fisheries (*Endangered*)

Five fish species are listed as endangered in areas located downstream of the Gateway West 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 water for dust control at about 16,000 to 25,000 gallons per day during construction (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. 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. The Gateway West Project 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, and 7¹² include wind energy facilities, ongoing nonrenewable

¹² There are only limited proposed projects along Segment 9.

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/ravens, thus increasing predation rates on the sharp-tailed grouse. Predation rates would most likely rise 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 Gateway West Project (see Section 3.11 – Special Status Wildlife and Fish Species). Although the Gateway West 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.

Because the Columbian sharp-tailed grouse may avoid areas that contain tall structures, the cumulative effects on this species may differ depending on which alternative is selected. Alternative 7H would pass through an area that would not accommodate additional transmission lines, indicating that no additional transmission lines could be collocated with this alternative. Because of this, if Alternative 7H is selected for Gateway West, other proposed transmission lines, such as the Zephyr and the Overland Intertie lines, would likely be built along Gateway West's Proposed Route or other Route Alternatives. Although this would limit the cumulative disturbances along Alternative 7H, it would result in multiple lines that are not co-located crossing through Columbian sharp-tailed grouse habitat in Cassia County. By co-locating these proposed lines, 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 that grouse would likely avoid. Therefore, cumulative effects on the Columbian sharp-tailed grouse would likely be greater under Alternative 7H than the other Route Alternatives considered along Segment 7.

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

The Columbia spotted frog and northern leopard frog may occur in wetland and riparian habitats found along the Gateway West Project. Habitat for the northern leopard frog occurs along all segments of the Gateway West Project. Habitat for the Columbia spotted frog occurs along Segments 4, 7I, 8, and 9. The transmission line for the Gateway West 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 Gateway West 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 the Gateway West Project: 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 Gateway West 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 (*Nonessential Experimental Population–Wyoming; 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), south of Segment 4 and north of Alternatives 4B through 4E (near the town of Kemmerer), and at about MPs 70 to 80 along Alternative 4A (all in Wyoming). All known wolf packs in Idaho are north of the Project area, and there are no known wolf packs near the Project area in Nevada. The cumulative effects of disturbance resulting from the Gateway West Project 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 Gateway West 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 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 by the various SHPOs).

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. 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/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.

Table 4.4-2 lists the existing and proposed activities within designated core/key areas. Additional transmission projects, located outside of core/key areas, are listed in Table 4.2-11. 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 Gateway West Project on the greater sage-grouse when taken together with past, present, and reasonably foreseeable future projects would be substantial.

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 as long as the EO is in place.

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

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
1W, Alternative 1E-A, 1E, Alternative 1E-C	19-22, 35-49 (1W[a]), 29-44, 70-71(1W[c]), 17-18, 58-72 (1E), 50-56 (1E-A), 5-7 (1E-B), 7-21.1(1E-C)	<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 1W(c)) 	Wind lease, two authorized, and segment proposed	Segment 1W would closely parallel existing transmission line; Alternative 1E-A would parallel Rock Creek and Fort Fetterman Road.
2, Alternative 2B, Alternative 2A	0-34, 65-81 (2), 0-17 (Alternative2A)	<ul style="list-style-type: none"> • One (1) transmission line 	Transmission	Segment 2 would closely parallel the existing transmission line and pipelines for full length and U.S. 287 for approximately 10 miles; other proposed transmission lines are planned to parallel the Gateway West alignment.
		<ul style="list-style-type: none"> • Two (2) large-diameter natural gas pipelines 	Multiple proposed (NLI, SWM, GS, ZE, TWP, NOI)	
		<ul style="list-style-type: none"> • U.S. 287, State Highway 72, I-80, U.S. 30, railroad 	Nonrenewable resource extraction	
		<ul style="list-style-type: none"> • WWE corridor • Active oil and gas development • Nonrenewable resource extraction • 1 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 (SWM, ZE, OI, TWP)	Gateway would parallel existing transmission line and one pipeline; Gateway is on the southern edge of the habitat polygon.
		<ul style="list-style-type: none"> • Three (3) large-diameter pipelines • U.S. 91 • Nonrenewable resource extraction 	Non-renewable resource extraction	

Table 4.4-2. Existing and Proposed Activities within Sage-Grouse Key and Core 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
4, 4A, 4B, 4C, 4D	0-15(4A); 0-12 (4B, C, D, E)	<ul style="list-style-type: none"> One (1) pipeline 	Transmission (SWM, ZE, OI, TWP)	Gateway West would parallel pipeline for approximately 10 miles and State Highway 372 for approximately 5 miles; Gateway West is on the very northern edge of the habitat polygon.
		<ul style="list-style-type: none"> State Highway 372, I-30 Dense active oil and gas development Nonrenewable resource extraction 	Nonrenewable resource extraction	
4, 4A, 4B, 4C, 4D, 4E	50-68 (4A); 32-40, 50-80 (4B, C, D, E)	<ul style="list-style-type: none"> Three (3) transmission lines 	Transmission (SWM, ZE, OI, TWP)	Gateway West would closely parallel one transmission line and the pipeline; Alternatives 4C, 4D, 4E would parallel I-30.
		<ul style="list-style-type: none"> One (1) large diameter pipeline I-30, U.S. 182 Active oil and gas development Nonrenewable resource extraction 	Nonrenewable resource extraction	
4, 4A	90-95 (4A)	<ul style="list-style-type: none"> Two (2) transmission lines 	Transmission (SWM, ZE, OI, TWP)	Gateway West would closely parallel one transmission line and I-30.
		<ul style="list-style-type: none"> One (1) large diameter pipeline I-30 	Nonrenewable resource extraction	
4	161-166	<ul style="list-style-type: none"> One (1) transmission line 	Transmission (SWM, ZE, OI, TWP)	Gateway West would parallel existing transmission line.
Alternatives 5A and 7A	10-13	<ul style="list-style-type: none"> One (1) transmission line 	Transmission line (OI)	Gateway West would result in new development along the northwestern edge of the polygon.
Alternatives 5B and 7B	10-11	<ul style="list-style-type: none"> One (1) transmission line 	Transmission line (OI)	Gateway West would result in new development along the northwestern edge of the polygon.
7	75-85	<ul style="list-style-type: none"> Two (2) large-diameter pipelines (Williams and Chevron) 	None	Gateway West would parallel and cross these existing pipelines.

Table 4.4-2. Existing and Proposed Activities within Sage-Grouse Key and Core 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, 9	115-120 (7), 0-19 (9)	<ul style="list-style-type: none"> Several small BLM-approved wind energy leases 	Transmission (SWI)	Gateway West would result in new development along the northern edge of the polygon.
			Several small pending BLM wind energy leases	
8	30-34 and	<ul style="list-style-type: none"> Two (2) 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: WCI (Wyoming to Colorado Intertie), HPE (High Plains Express), ZE (Zephyr), SWM (Southern Wyoming to Market Place), TWE (Transwest Express), OI (Overland Intertie), 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. Alternative 7H would pass through an area that would not accommodate additional transmission lines, indicating that no additional transmission lines could be co-located with this alternative. Because of this, if Alternative 7H is selected for Gateway West other proposed transmission lines, such as the Zephyr and the Overland Intertie lines, would likely be built along Gateway West’s Proposed Route or other Route Alternatives. As was discussed for the Columbian sharp-tailed grouse, although this would limit the cumulative disturbances along Alternative 7H, it would result in multiple lines that are not co-located crossing through greater sage-grouse habitat in Cassia County. By co-locating these proposed lines together, 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. Therefore, cumulative effects on the greater sage-grouse would likely be greater under Alternative 7H than the other Route Alternatives considered along Segment 7.

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 Highway 80, I-30, and the town of Kemmerer. The cumulative effects of disturbance resulting from the Gateway West Project 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 January 14, 2010, the USFWS proposed revising the designation of critical habitat for the bull trout. In total, approximately 22,679 miles of streams and 533,426 acres of reservoirs or lakes were proposed for the revised critical habitat designation. The Gateway West Project would span a portion of this newly proposed critical habitat along Alternative 9E (near point 9n); however, no road crossings would occur across proposed bull trout critical habitat. In addition, the vegetation located adjacent to this crossing of proposed critical habitat consists of low shrubs and disturbed habitat, indicating that vegetative clearing would not be necessary in this area. 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. If Alternative 9E is selected, the cumulative effects on proposed critical habitat resulting from the Gateway West Project 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 1E, 1W, 2, 3, and 4. The Gateway West Project 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 the Gateway West Project (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 the Gateway West Project 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 the Gateway West Project; 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 the 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 (*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, 3, 4, 5, 6, 7, 8, 9, and 10. The Gateway West Project 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 the Gateway West Project (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of the Gateway West Project 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 1E, 1W, 2, 3, and 4; and colonies were mapped along Segments 1E, 1W, and 4. Black-tailed prairie dog colonies were mapped along Segments 1E and 1W. The Gateway West Project 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 the Gateway West Project (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of the Gateway West Project 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, the Gateway West Project would cross suitable habitat for this species along Segments 2, 3, and 4. The Gateway West Project 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 the Gateway West Project (see Section 3.11 – Special Status Wildlife and Fish Species). The cumulative effects of the Gateway West 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*)

The yellow-billed cuckoo may occur within riparian and wetland habitats along Segments 1E, 1W, 5, 7, 8, 9, and 10. 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 the Gateway West Project 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 Other Forest Service Sensitive, MIS, or BLM Sensitive Species

With the exception of the species listed above, construction and operations of the Gateway West Project 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 the Gateway West Project when taken together with past, present, and reasonably foreseeable activities would not have a cumulative impact on oil and gas production.

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 Alternative Routes 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 two proposed transmission lines, Zephyr and Overland Intertie; 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 subsistence, 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 and the proposed Overland Intertie and Zephyr transmission line projects 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.

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. Soil disturbance will remain during the life of the projects. These effects are short-term, occurring during the construction period, as disturbed areas are required to be reclaimed.

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 the Gateway West Project 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 cumulatively impact. Construction of Gateway West and 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 fish and plants in these watershed and the cumulative effects are discussed in Section 4.4.8. 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 may 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, the Gateway West Project is only partially located within this designated corridor. The Gateway West Project 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 (such as Alternatives 1E-C and 7I) 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.

Long linear projects such as the Gateway West Project, 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 Gateway West 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

Proposed 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 the Gateway West Project 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, below, summarizes those amendments by segment and alternative route.

Table 4.4-3. Summary of Plan Amendments by Route

Segment	Alternative	Land Management Plan	Change	Location
1	Proposed 1W(c), 1E; Alternative 1E-C	Casper RMP	Reclassify 630 acres of BLM-managed surface lands and 799 acres of federal mineral estate from VRM Class II to Class III.	1W(c): MP 26-27.2; 1E: 29-29.2; 1E-C: 4.1-4.3 (may also include parcel from MP 2.0-2.5)
	Proposed 1E	Medicine Bow Forest Plan	Reallocate 3,200 acres from MA 3.31 to MA 8.3.	1E: MP 29.9-32.6
	Alternative 1E-C		Reallocate 2,560 acres from MA 3.31 to MA 8.3.	1E-C: MP 5.0-6.1
	Alternative 1E-B	Rawlins RMP	Reclassify three isolated parcels of public land from VRM Class II to Class III, 177 acres total.	1E-B: MP 3.6-4.1, 4.4-4.6, 7.7-8.2, 10.8-11.3
4	Alternative 4B, 4D	Kemmerer RMP	Decision #6008: Designate a utility corridor 1 mile in width, generally centered on the transmission line if either Alternative route 4B or 4D is selected	MP 10.4-91.9
	Alternative 4B, 4C		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
	Alternative 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 Route Segment 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 173.1 – 174.7
	Proposed Route Segment 4	Caribou Forest Plan	Reclassify 335 acres of lands currently classified as Forest Vegetation Management, Elk and Deer Winter Range, and Semi-Primitive Recreation, to Prescription 8.1, Concentrated Development Areas with ROS of Roaded Natural.	4: MP 175.6-166.4

Table 4.4-3. Summary of Plan Amendments by Route (continued)

Segment	Alternative	Land Management Plan	Change	Location
7	Alternative 7H	Sawtooth Forest Plan	Reclassify 1,234 acres from Semi-Primitive Motorized to Roded Natural.	
	Alternative 7I		Reclassify 8,465 acres from Semi-Primitive Motorized to Roded Natural.	
	Alternatives 7I, 7J	Cassia RMP	Reclassify VRM II to VRM III in Goose Creek Travel Zone.	between MP 115.1 and 115.2
	Alternative 7E		Reclassify 39 acres in the Spring Canyon area from VRM Class II to Class III.	between MP 3.6 and 3.9
	Alternative 7H		Jim Sage area, reclassify 122 acres of VRM Class II to Class III.	MP 79.3-80.2
			Cottonwood Creek area, reclassify 806 acres of VRM Class III to Class IV.	MP 109.4-112.2
	Alternative 7I, 7J	Twin Falls MFP	Reclassify 70 acres in Rock Creek area from VRM Class II to Class III	MP 169.6-169.9
Alternative 7I, 7J	Sawtooth Forest Plan	Reclassify 2,613 acres from Semi-Primitive motorized to roded natural		
8	Proposed 8	Jarbidge RMP	Amend to specify that within the WWEC, no surface disturbance within 330 feet of the Oregon Trail and Kelton Road	Reclassification areas: MP 45.3-47.6; MP 49.8-50.7; NHT: Between 55.6 and 55.7
	Alternative 8A		Reclassify 5,200 acres of VRM Class I reclassified to class III along the Oregon Trail.	
	Proposed 8		Reclassify 2,800 acres of VRM Class I to Class III along the Oregon Trail.	MP 36.2-38; 43.3-45.6; MP 52-53
	Alternative 8A	MUA-7: change to no surface disturbance within 330 feet of the Oregon trail and historic sites.		
	Proposed 8, Alternative 8A		MUA-3; Reclassify areas for areas within T04S R09E Sect 35 and T05S R09E Sect 2 currently designated as restricted to avoidance to accommodate GW .	8: between 45.3-52.1, (check 54.4-55.2); 8a: between MP 32.8-34.1, 35.1-39.8, 43.3-45.6
	Alternative 8E	SRBOP RMP	Approximately 3,100 acres 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.	Alternative 8E: MP 10.2-11.5; 17.3-18.4

Table 4.4-3. Summary of Plan Amendments by Route (continued)

Segment	Alternative	Land Management Plan	Change	Location
8	Proposed 8	SRBOP RMP	Reduce the Snake River Canyon SRMA area by approximately 6,400 acres to accommodate a major powerline.	MP: 119.2-123.3
			Reclassify approximately 6,400 acres associated with the Oregon trail and Snake River canyon to VRM Class III.	
	Proposed 8	Bennett Hills MFP	Reclassify VRM II to VRM III 3,000 feet north of existing transmission line ROW, including the existing ROW.	MP 33.9-38, 36.7-37.3, 40.4-42.8, 43.8-44.8
			Prohibit all land-disturbing developments within 330 feet of the Oregon Trail and manage archeological sites as required.	
9	Proposed 9, Alternatives 9B	Jarbidge RMP	Reclassify the area within the WWE Corridor to VRM III.	MP: 12.3-14.4
	Alternative 9D/9G		Reclassify 1,204 acres of VRM II to VRM III near CJ Strike Reservoir (**This is land included in both the Jarbidge and SRBOP RMPs; the Cove non-motorized area (designated under the SRBOP RMP) occurs within this location and the BLM has stated the plan could not be amended to permit the TL through Cove).	MP: 12.3-14.4
	Alternative 9D/9G	SRBOP RMP	Reduce the C.J. Strike SRMA area by approximately 3,100 acres to accommodate a major powerline.	MP: 9.4-15.8
			Reclassify 1,204 acres of VRM II to VRM III near C.J. Strike Reservoir (**This is land included in both the Jarbidge and SRBOP RMPs; the Cove non-motorized area [designated under the SRBOP RMP] occurs within this location and the BLM has stated the plan could not be amended to permit the TL through Cove).	MP: 12.3-14.4

Table 4.4-3. Summary of Plan Amendments by Route (continued)

Segment	Alternative	Land Management Plan	Change	Location
9	Alternatives 9D, 9F		Approximately 3,100 acres 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.	Alt 9D: MP 46.2-47.5, 53.2-56.9; Alternate 9F: MP 50.8-52.1 59.7-61.6
	Alternative 9G/9H		Reclassify VRM II areas within 250 of route centerline to VRM Class III (maintain 0.5 mile buffer from historic trails).	9G: MP 43.4-44.3, 44.4-49.5, 49.9-55.2; 9H: MP 47.9-48.7, 48.9-54, 54.4-59.7
	Proposed 9	Bruneau MFP	Reclassify VRM parcel adjacent to Castle Creek from VRM II to VRM III.	between MPs 130.8-131

In all cases of public land reclassification listed in Table 4.4-3, more activities in addition to the construction and operations of the Gateway West Project would be permissible without additional land management plan amendments. In several cases, where the parcel being reallocated is small there is no additional activity that could reasonably fit within the parcel in addition to the Gateway West Project 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 would allow for more motorized vehicle use. That use is already discussed under the impacts of the Gateway West Project itself and is taken into account as an indirect effect of the Project. No additional cumulative effects are expected for 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 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 the Gateway West Project along much of its length. In Segment 1 across the Medicine Bow-Routt NFs, the reclassification of lands would allow for additional transmission to be sited without an additional Forest Plan amendment.

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 the Gateway West Project (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 the Gateway West Project 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 the proposed Project would have temporary and permanent effects on prime farmland, as would other projects developed within the CIAA. Potential impacts from the proposed Project would be reduced with implementation of the proposed reclamation methods identified in Appendix C-2. 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 within 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 ranges from about 3 percent of the CIAA for Segment 4 to 46 percent of the CIAA for Segment 10. Construction and operations of the proposed 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 crosses 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, but 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 additional transmission lines in the same area (Zephyr and Overland Intertie), 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 (presently on hold) could affect 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, sometimes including needing to reroute or delay traffic. However, these impacts would be temporary in nature and only last as long as construction activities occurred within the area. If other reasonably foreseeable projects are construction at the same time and location as the Gateway West Project, 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 each of the states is generally good to excellent. Current air emissions in each of the states 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 Nevada and for most of Idaho. Proposed projects in the CIAA that could contribute to deterioration in air quality include five 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 two small proposed new 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 the Gateway West Project would have no measurable impact on air quality for any of the three states in the CIAA, it would not contribute to the cumulative impact of other projects on air quality in the CIAA. This is the case across all alternatives.

Total estimated CO₂ equivalent emissions (total emissions of all greenhouse gases converted to equivalent of CO₂) from construction of the Project is 232,268 tons over the construction period. Approximately 54 percent of these emissions or 125,425 tons CO₂ equivalent is allocated to Wyoming, and 46 percent of these emissions, or 106,843 tons CO₂ equivalent, is allocated to Idaho. On an annual basis, the project construction CO₂ equivalent emissions for Wyoming and Idaho are 24,593 and 20,950 tons CO₂ equivalent per year respectively.

Predicted CO₂ equivalent emissions for 2010 in each state 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. GHG emissions from operations activities would be on the order of less than 3 tons CO₂ equivalent per year. Therefore, construction and operations of the Gateway West Project 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 the Gateway West Project 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. Methods to remediate past environmental contamination would be applied to any that are found and would minimize the risk that the contamination would spread or affect public help.

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 in contact with them effectively minimizes 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 impacts 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 impacts 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 the Gateway West Project 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 the Gateway West Project 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.