

# **Executive Summary**

## **INTRODUCTION**

This Boardman to Hemingway Transmission Line Project (B2H Project) Final Environmental Impact Statement (EIS) has been prepared in response to an Application for Transportation and Utility Systems and Facilities on Federal Lands (Standard Form 299) submitted by Idaho Power Company (Applicant) to the Bureau of Land Management (BLM) and United States Forest Service (USFS), Department of the Navy (Navy), and the Bureau of Reclamation (Reclamation). The Applicant proposes to construct, operate, and maintain the B2H Project, which is an approximately 300-mile-long (depending on the route selected), single-circuit, 500-kilovolt (kV), alternating-current, overhead electric transmission line and ancillary facilities. The transmission line would connect the northern terminus, the Longhorn Substation, a substation planned by Bonneville Power Administration (BPA) approximately 4 miles east of the city of Boardman in Morrow County, Oregon, to the existing Hemingway Substation, near the city of Melba in Owyhee County, Idaho. The goal for the B2H Project is to provide additional electrical load capacity between the Pacific Northwest region and the Intermountain region of southwestern Idaho. The B2H Project would alleviate existing transmission constraints and ensure sufficient electrical capacity to meet present and forecasted customer needs.

The proposed B2H Project would cross federal, state, and private lands in five counties in Oregon and one county in Idaho (refer to Map S-1). The proposed transmission line would cross federal lands administered by federal agencies, including the BLM and the USFS. The B2H Project would potentially affect lands and assets administered by the Reclamation and may affect lands of the Naval Weapons System Training Facility (NWSTF) Boardman and associated military Special Use Airspace administered by the U.S. Department of the Navy (Navy).

The BLM, as the lead federal agency, is responsible for preparing the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA); Council on Environmental Quality regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508); Department of the Interior (USDI) NEPA implementing regulations; the BLM NEPA Handbook (H-1790-1) and other guidance; and other pertinent laws, regulations, and policies. The NEPA requires that the federal government take a hard look and consider the impact of a proposed action on the human environment, including the natural and physical environment and the relationship of people with that environment, before decisions are made. NEPA documents should focus on the issues that are significant to the action in question (40 CFR 1500.1(b)). The NEPA process is intended to help public officials make decisions that are informed by an understanding of environmental consequences (40 CFR 1500.1(c)).

This EIS presents the results of the environmental analysis of the B2H Project. In addition to analyzing and disclosing the potential impacts of the B2H, the EIS evaluates conformance of the B2H Project with the relevant BLM resource management plans (RMP) and the USFS land and resource management plan (LRMP) and proposed amendments to these land-use plans (LUP).

### *SUMMARY OF CHANGES FOR THE DRAFT EIS*

Throughout the Final EIS, changes (e.g., additions, revisions) made between the Draft and Final EIS are demarcated by a black vertical line along the left margin of the page.

Generally, changes were made to the network of alternative routes studied and analyzed, which are summarized as follows:

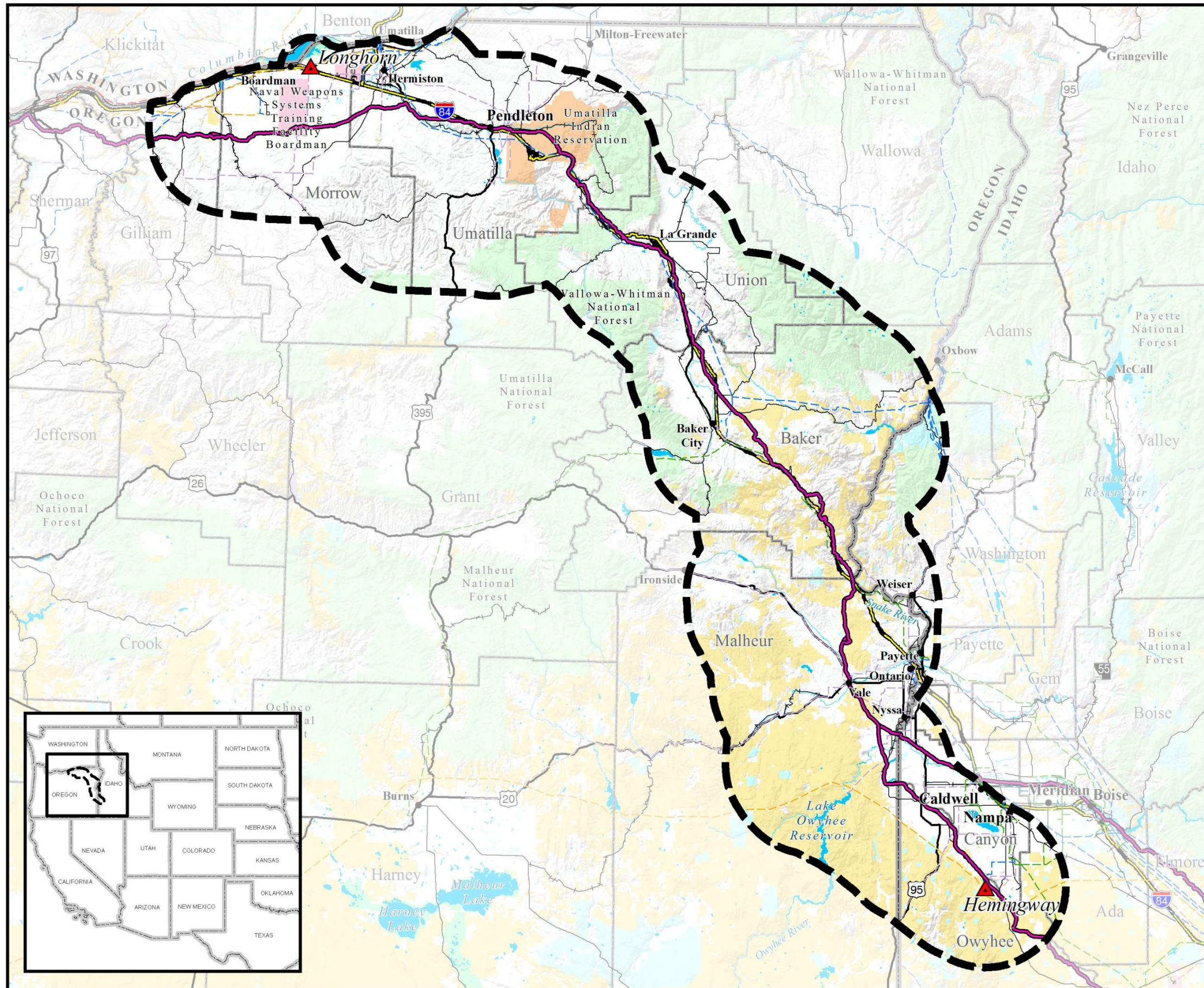
- The Applicant changed the northern end of its Proposed Action from the proposed Grassland or alternative Horn Butte substation to the proposed Longhorn Substation and added a route variation along the west side of Bombing Range Road (requiring removal of an existing BPA 69-kV line), which is on the NWSTF Boardman along the west side of the eastern boundary of the military facility (Section 2.1.1.1)
- The BLM requested colocation of the Draft EIS Agency Preferred Alternative route for the proposed transmission line closer to existing transmission lines where possible (Section 2.1.1.2)
- Localized route-variation options were developed from recommendations in comments received between the Draft EIS and Final EIS (Section 2.1.1.3)

As stated, a part of the Applicant's Proposed Action is to remove the portion of BPA's 69-kV transmission line along the west side of Bombing Range Road that would be displaced by the proposed 500-kV transmission line. Although not part of the Applicant's Proposed Action, if an alternative route along the west side of Bombing Range Road is selected for construction of the transmission line, the existing 69-kV transmission line, owned and operated by BPA, may be relocated. The additional action of replacing the BPA 69-kV line is a connected action under the NEPA, the effects of which are analyzed and addressed in the EIS (Section 2.5.2.1, Chapter 3).

Also in response to comments received on the Draft EIS, explanation and information has been incorporated in various sections of the document. A description of the overall approach for organizing the NEPA process and the methodologies for conducting the resource analyses has been added to assist the reviewer in understanding the means for reaching conclusions. Explanation of where impacts would occur and where mitigation would be applied, and effectiveness of mitigation, has been expanded. Since the Draft EIS was prepared, updated resource data have become available and have been incorporated for resource analysis where applicable. More in-depth descriptions of analysis results are provided.

Finally, the Environmentally Preferable Action Alternative is identified.





Map S-1  
Project Area

BOARDMAN TO HEMINGWAY  
TRANSMISSION LINE PROJECT

Project Features

- Project Area Boundary
- Substation (Project Terminal)

Land Ownership

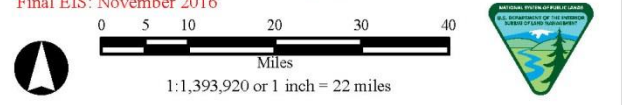
- |                            |                                |
|----------------------------|--------------------------------|
| Bureau of Land Management  | U.S. Fish and Wildlife Service |
| Bureau of Reclamation      | U.S. Forest Service            |
| Indian Reservation         | Other Federal                  |
| National Park Service      | State Land                     |
| U.S. Department of Defense | Private Land                   |

General Reference

- |                                 |   |
|---------------------------------|---|
| City or Town                    | Interstate Highway  |
| 500-kV Transmission Line        | U.S. Highway  |
| 345-kV Transmission Line        | State Highway   |
| 230-kV Transmission Line        | Lake or Reservoir   |
| 138-kV Transmission Line        | State Boundary  |
| 69- to 115-kV Transmission Line | County Boundary   |
| Railroad                        | Oregon National Historic Trail Congressionally Designated Alignment |

SOURCES:  
 Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013;  
 Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007,  
 Logan Simpson Design 2011, Vertyx 2012; Pipelines, ESRI 2012;  
 Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013;  
 Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013;  
 Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

NOTES:  
 • Substation symbols do not necessarily represent precise locations.  
 • The B2H Project area boundary is defined by buffering the alternative route centerlines.  
 • Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).  
 • Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.  
 • No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.  
 Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016





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## **APPLICANT'S INTERESTS AND OBJECTIVES**

The Applicant's interests and objectives for the B2H Project is to relieve existing transmission constraints between the Pacific Northwest and Intermountain West regions, increase opportunities for the exchange of energy between the regions; ensure sufficient capacity for the Applicant to meet its forecasted customer demand requirements, and improve system reliability as demands on the transmission system continue to grow.

The transmission system connecting the Pacific Northwest and Intermountain West regions is at capacity limits during peak electrical demand and is causing congestion-related issues. The Northern Tier Transmission Group—a Western Electricity Coordinating Council (WECC) planning group—determined in its 2009, 2011, 2013, and 2015 Biennial Transmission Plans that the existing regional transmission system was not adequate to serve the projected regional needs and that additional transmission system upgrades would be needed to reliably meet the projected regional needs. The B2H Project was one of the major regional transmission upgrades identified and included in the Biennial Transmission Plans to meet the future needs of the region. Adding the B2H Project to the existing transmission system would create additional redundancy, additional capacity, and would make the transmission system more robust.

The B2H Project would alleviate transmission constraints and provide operational flexibility by adding approximately 1,000 megawatts (MW) of much needed bi-directional capacity between the Pacific Northwest and Intermountain West regions. The additional capacity would help improve the regions' ability to transmit low-cost energy from a variety of generation sources to serve residences, farms, businesses, and other customers throughout the regions. The ability to exchange additional energy between the regions increases efficiencies, possibly helping to avoid the need to construct new power plants, which helps to keep electricity rates lower and is favorable for the environment.

With respect to the Applicant's customer demand requirements, the B2H Project has been identified consistently as part of the preferred resource portfolio in the company's Integrated Resource Plans (IRPs) dating back to 2009. The IRPs describe the company's projected need for additional electricity and the resources necessary to meet the needs while balancing reliability, environmental responsibility, efficiency, and cost. As discussed in the Applicant's 2015 IRP, the number of customers in the Applicant's service area is expected to increase from approximately 515,000 in 2014 to more than 711,000 by 2034. Peak-hour energy demand in the Applicant's service territory is expected to grow by 1.5 percent per year and average energy demand is expected to grow by 1.2 percent per year from 2015 to 2034 (Idaho Power Company 2015d). Further, wind- and solar-resource development has accelerated in recent years. The B2H Project would help to reliably interconnect these often remote renewable resources and efficiently deliver power to local load centers. The B2H Project would help facilitate access to new market tools such as energy imbalance markets, which could help reduce power supply costs for customers and integrate intermittent resources such as wind and solar.

The B2H Project is neither required to support any particular new power-generation project nor justified by any particular existing power-generation project. Rather, the B2H Project would help the Applicant to

meet its Federal Energy Regulatory Commission, Oregon Public Utility Commission, and the Idaho Public Utility Commission requirements to meet growing load needs and provide safe, reliable, and economic power supply. The Applicant would meet these requirements by providing a high-capacity connection between two points in the existing bulk electric system, adding capacity to transmit electricity during periods of high demand and accommodate third-party transmission requests.

### **AGENCIES' PURPOSE AND NEED**

The B2H Project has been recognized as a nationally important transmission project. In October 2009, the Department of Energy and eight other federal agencies entered into a Memorandum of Understanding to improve coordination among project applicants, federal agencies, states, and tribes involved in the siting and permitting process for electric transmission facilities on federal land and recognizing that “[e]xpanding and modernizing the transmission grid by siting proposed electric transmission facilities will help to accommodate additional electrical generation capacity over the next several decades, including renewable generation as well as improve reliability and reduce congestion” (Memorandum of Understanding Regarding Coordination in Federal Agency Review of Electric Transmission Facilities on Federal Land [October 23, 2009]). The other eight agencies include the Department of Agriculture, Department of Commerce, Department of Defense, Council on Environmental Quality, Advisory Council on Historic Preservation, Department of the Interior, and the Federal Energy Regulatory Commission. In October 2011, the President formed the Rapid Response Team for Transmission, composed of the nine agencies that signed the 2009 Memorandum of Understanding, to prioritize and expedite the development of seven transmission projects. The B2H Project is one of those priority projects, which the President determined would help increase electric reliability, integrate new renewable energy into the grid, and saving money for consumers.

The federal agencies are guided further by the Energy Policy Act of 2005, Executive Order 13604, and the President’s Climate Action Plan (June 25, 2013), which recognized the need to improve domestic energy production, to develop renewable-energy sources, and to improve infrastructure for collection and distribution of energy resources.

The BLM’s need is to respond to the Applicant’s application for a right-of-way across federally managed lands. The purpose of the BLM’s action would be to grant, grant with modifications, or deny the Applicant’s application for use of BLM-managed public lands to construct, operate, and maintain the B2H Project.

The need for USFS action is to respond to the Applicant’s request for use of National Forest System lands. The purpose of the USFS’ action is to determine whether to issue a special-use authorization for the construction, operation, and maintenance of the B2H Project and, if issued, to determine what terms and conditions should apply.

Reclamation’s need for action is to respond to the application submitted by the Applicant for a use authorization. The purpose of Reclamation’s action is to determine whether to grant, grant with modifications, or deny the Applicant’s application for use of Reclamation-managed lands to construct, operate, and maintain the Proposed Action or alternatives.



The Navy's need is to consider the application filed for an easement on the NWSTF Boardman and ensure that the Proposed Action is compatible with environmental compliance requirements as well as mission, operation, safety, and security of military training assets on land and associated military Special Use Airspace administered by the Navy.

The U.S. Army Corps of Engineers' (USACE) need is to respond to the Applicant's application for a Section 10 permit, Section 404 permit, or both permits if an action alternative is selected for construction of the B2H Project that affects navigable waters of the U.S. The purpose of the USACE's action is to determine the terms and conditions of applicable permits as needed.

Bonneville Power Administration's need is to use this EIS to help support any decision concerning its need to participate in ownership of the proposed B2H Project to continue serving its customers in southeastern Idaho. In evaluating the need for action, BPA will consider the following purposes: maintain its transmission system reliability and performance; meet its contractual and statutory obligations; minimize impacts on the environment; and minimize costs while meeting its power and transmission service needs.

## **DECISIONS TO BE MADE**

The BLM, USFS, Reclamation, Navy, USACE, and BPA will use analyses in this EIS to support decisions related to the proposed B2H Project. The BLM and USFS also must decide whether one or more LUPs would be amended to allow for right-of-way for the proposed transmission line and associated facilities. The BLM and USFS are integrating the land-use planning process for amending agency LUPs as described in 43 CFR 171 and 37 CFR 219.10(f) of the planning regulations in effect before November 9, 2000, respectively, with NEPA compliance for the proposed rights-of-way for the B2H Project on BLM and USFS administered land. The potential land-use plan amendments that may be required for approval of the B2H Project are described in Chapter 3, Section 3.4 with the results of the analysis of the environmental consequences of amending the LUPs. The land-use planning process is described in Chapter 1, Section 1.5.

If a route is selected, depending on the route selected for the transmission line, other potentially affected federal agencies may tie to the analysis in this EIS in issuing decisions and similar use authorizations.

Approximately two-thirds of the B2H Project would be located on nonfederal lands. The nature and scope of right-of-way crossing nonfederal land would be decided by applicable state, county, or local government entities rather than federal entities. With respect to this document and the related Records of Decision (ROD), the federal agencies are not deciding the nature and scope of the right-of-way crossing nonfederal lands.

## APPLICANT'S PROPOSED ACTION

### PROJECT DEVELOPMENT

The Applicant submitted its initial application for right-of-way and a preliminary Plan of Development (POD) for the B2H Project to the BLM Vale District Office on December 19, 2007 (Idaho Power Company 2007a, 2007b), and to the Wallowa-Whitman National Forest on March 25, 2008. The BLM, serving as the lead federal agency, determined that approval of the request would be a major federal action requiring preparation of an EIS under the NEPA. The BLM published a Notice of Intent to prepare the EIS in the *Federal Register* on September 12, 2008, to formally initiate the NEPA process (BLM and USFS 2008). In response to public feedback during the initial scoping period in 2008, the Applicant sent a letter to the BLM in April 2009 stating its proposal instituting the Applicant-sponsored Community Advisory Process to solicit additional input from the public regarding routing of the proposed transmission line. The Applicant conducted the Community Advisory Process, separately from the NEPA process, to consider alternatives to its initially proposed route and identify a revised proposed route for the proposed transmission line. At the request of the public, the BLM agreed to include comments generated during the Community Advisory Process as scoping comments for the NEPA process (Revised Scoping Report, BLM 2011).

The Applicant then submitted a revised right-of-way application on June 21, 2010 (Idaho Power Company 2010a), and a revised Notice of Intent was published in the *Federal Register* on July 27, 2010 (BLM and USFS 2010). In February and November 2011, May 2012, and May 2013, the Applicant submitted additional revisions to its application and preliminary POD (Idaho Power Company 2011a, 2011b, 2011c, 2011d).

In its comments on the Draft EIS in March 2015, the Applicant indicated a modification to its Proposed Action (Section 2.1.1) and submitted revisions to the application in September and November 2015 and May 2016 (Idaho Power Company 2015a, 2015b, 2016). Because the modification of the Proposed Action involves crossing the NWSTF Boardman, the Applicant submitted an application for an easement to the Navy in June 2015 (Idaho Power Company 2015c).

### PROPOSED ACTION

The Applicant's Proposed Action (Section 2.3) includes the following:

- Constructing, operating, and maintaining a single-circuit, 500-kV, alternating-current, overhead transmission line in a 250-foot-wide right-of-way from the proposed Longhorn Substation near Boardman in Morrow County, Oregon, to the Hemingway Substation in Owyhee County, Idaho, a distance of approximately 300 miles depending on the route selected (ancillary facilities include temporary and permanent access roads; and temporary multi-use yards, helicopter fly yards, and pulling-and-tensioning sites); geotechnical investigations would be completed in advance of final design and engineering;
- Constructing a 500-kV connection in the planned Longhorn Substation;
- Constructing an internal communication system to control the transmission line and manage the flow of electricity, with regeneration sites approximately every 40 miles;



- Removing the existing BPA 69-kV transmission line partially or entirely from the NWSTF Boardman (to allow construction of the proposed 500-kV line);
- Potentially relocating approximately 0.9 mile of existing 230-kV transmission line in the vicinity of Flagstaff to allow for efficient placement of the 500-kV line; and
- Potentially relocating an approximately 5.3-mile-long section of existing 138-kV line in the vicinity of Weatherby, Oregon, with an existing 69-kV line; the structures would be rebuilt to accommodate the two transmission lines (i.e., double-circuit 138/69-kV) and a 12-kV line underbuild, enabling use of the 138-kV line right-of-way for the proposed 500-kV transmission line.

As stated, a part of the Applicant's Proposed Action is to remove the portion of BPA's 69-kV transmission line along the west side of Bombing Range Road that would be displaced by the proposed 500-kV transmission line. Although not part of the Applicant's Proposed Action, the existing displaced BPA 69-kV line may be relocated to the east side of Bombing Range Road (Section 2.5.2.1, Chapter 3).

## **ALTERNATIVES ANALYZED**

The EIS evaluates the No Action Alternative (Section 2.5.3), alternative routes for the proposed transmission line (Section 2.5.2), as well as alternatives to the Proposed Action (Section 2.5.4).

### *NO ACTION ALTERNATIVE*

The No Action Alternative describes the reasonably foreseeable outcome that would result from denying the Applicant's request for a right-of-way grant and special use authorization to construct the proposed B2H Project. If no action is taken, the BLM would not grant a right-of-way, the USFS would not grant a special use authorization, and other potentially affected federal agencies would not grant applicable authorizations or permits to cross federal lands and the transmission line and ancillary facilities would not be constructed on federal lands. Additionally, the objectives of the signatories to the 2009 Memorandum of Understanding to accommodate additional electrical generation capacity, improve reliability, and reduce congestion by expanding and modernizing the transmission grid through the B2H Project would not be met. The Applicant's objectives for the B2H Project, which include providing additional capacity to connect the Pacific Northwest region with the Intermountain region of southern Idaho to alleviate existing transmission constraints between the two areas and to ensure sufficient capacity so that Idaho Power can meet present and forecasted load requirements (Section 1.4) would not be met.

The No Action Alternative is intended to describe the existing and future state of the environment in the absence of the Proposed Action. It provides a baseline for comparing environmental effects of the action and demonstrates the consequences of not granting right-of-way and authorizing special use.

### *ALTERNATIVE TRANSMISSION LINE ROUTES*

The Applicant's process to identify alternative routes and, ultimately, an Applicant's Proposed Action Alternative route for the proposed transmission line is summarized in the 2010 Siting Study (Idaho Power Company 2010b) and 2012 Supplemental Siting Study (Idaho Power Company 2012). In response to comments on the Draft EIS, revisions were made to the network of alternative routes to

address in the Final EIS. A number of comments on the Draft EIS offered recommendations for route-variation options as variations of sections of the longer alternative routes. Each route-variation options were evaluated and many of the route-variation options were carried forward as sections of alternative routes in the Final EIS; only a few were considered but eliminated from detailed analysis in the EIS (Section 2.5.4.3). Descriptions of the recommended route-variation options are provided in Section 2.1.1.3. The network of alternative routes carried forward for analyze in the Final EIS is shown on Maps S-2a and S-2b.

The B2H Project area is organized in six segments that are based generally on similar geography, natural features, drainages, resources, and/or land uses. Each segment has multiple alternative routes, and some of the alternative routes have one or more smaller localized variations.

Each segment begins and ends where the alternative routes meet and intersect at a common point, or segment node. The alternative routes and local route variations along the alternative routes where applicable, are listed in Table S-1 and shown on Maps S-3a through S-3f. More detailed descriptions of the alternative routes and route variations are provided in Section 2.5.2. Note that the term “Proposed Action” refers to the Applicant’s proposal to construct, operate, and maintain a 500-kV transmission line from the area of Boardman, Oregon, to the area of Hemingway, Idaho. As part of the Proposed Action, the Applicant proposed a preferred route, referred to in the EIS as the Applicant’s Proposed Action Alternative route.

#### *STUDY AND ANALYSIS*

The overall approach for environmental analysis of the B2H Project (Section 2.5) was designed to develop an inventory of environmental data reflecting the existing condition of the environment in sufficient detail to (1) predict potential or probable impacts on the environment brought about by the B2H Project; (2) prepare realistic recommendations to avoid, minimize, rectify, reduce, or eliminate impacts identified during the analysis; (3) compare the alternative routes based on interdisciplinary resource analysis and identify the alternative route exhibiting the least impact (i.e., environmentally preferable action alternative); (4) identify an Agency Preferred Alternative in response to local concerns and in collaboration with the cooperating agencies; and (5) meet the environmental reporting requirements of the BLM, in coordination with cooperating federal and state agencies and county and local governments.



Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
<b>Segment 1—Morrow-Umatilla (Map S-3a)</b>								
Applicant's Proposed Action	91.9	15.2	0.0	76.7	36.9	38.2	4.6	After the Draft EIS was released for public review, the Applicant modified its Proposed Action Alternative identified in the Draft EIS to use the Longhorn Substation as the proposed northern terminus and identified a route variation along the west side of Bombing Range Road, on the Naval Weapons System Training Facility (NWSTF) Boardman. The route variation was developed to avoid crossing privately owned irrigated agricultural lands and repurpose the area currently occupied by the BPA 69-kilovolt (kV) transmission line, which would have to be removed, and may be relocated, to allow for construction of the proposed 500-kV line.
Variation S1-B2 (Map S-3a, Area B)	6.4	3.7	0.0	2.7	6.2	0.2	57.8	<i>This route variation was developed to colocate the alignment of the proposed transmission line closer to the existing 230-kV transmission line within the U.S. Forest Service (USFS)-designated utility corridor.</i>
East of Bombing Range Road (Longhorn Variation in Draft EIS)	92.3	4.6	2.0	85.7	38.7	37.8	4.6	This alternative route, addressed in the Draft EIS, is similar to the Applicant's Proposed Action Alternative, except it is aligned along the east side of Bombing Range Road. The route was developed to address concerns (1) raised by the Navy with the Longhorn Alternative about encroachment on military airspace, (2) to minimize effects on the tree farms and dairies, and (3) to align with an existing transmission line.
Applicant's Proposed Action – Southern Route	99.1	15.3	0.0	83.8	39.0	45.0	4.2	This route uses the Applicant's Proposed Action Alternative to a point northwest of Pilot Rock where the route turns south to follow a route-variation option recommended by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources (DNR) to a point where the route intersects with and follows the southern route variation recommended by Morrow and

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		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								Umatilla counties between the Draft and Final EIS. The route was developed to avoid crossing through a cultural landscape in the McKay Creek area and avoid crossing areas of dense agriculture to the north along the Applicant's Proposed Action Alternative.
West of Bombing Range Road – Southern Route	95.6	15.5	0.0	80.1	25.8	47.5	4.4	This alternative route is the same as the Applicant's Proposed Action Alternative for the north-south section on the west side of Bombing Range Road, but then intersects with and follows the southern route variation recommended by Morrow and Umatilla counties. The route was developed to minimize crossing through areas of potential wind farm development and avoid crossing areas of denser agriculture to the north along the Applicant's Proposed Action Alternative.
Longhorn	88.2	4.6	0.0	83.6	28.9	41.5	4.8	This alternative route, addressed in the Draft EIS, was developed by the Applicant when the Longhorn Substation was identified as an alternative northern terminus. Except for the initial north-south portion exiting the Longhorn Substation, the alternative route is the same as the Applicant's Proposed Action Alternative for the remainder of the route.
Interstate 84	84.7	4.7	0.0	80.0	37.7	35.6	5.0	This alternative route was developed within the B2H Project study area boundary based on comments on the Draft EIS to consolidate the proposed transmission line with other linear facilities and in an area already disturbed by development. As the name implies, the alternative route parallels Interstate 84 east to a point approximately 6 miles west of Pendleton, Oregon, the route then proceeds south to a point northwest of Pilot Rock where the line intersects with and follows the Applicant's Proposed Action Alternative for the remainder of the route to the east. This route also avoids crossing the Umatilla Indian Reservation.



Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
Variation S1-A2 (Map S-3a, Area A)	18.5	0.0	0.0	18.5	18.5	0.0	0.0	<i>This route variation parallels an existing 230-kV transmission line south of Interstate 84 from the area of Echo to Rieth and was developed in response to comments on the Draft EIS to consolidate the proposed transmission line with other linear facilities and in an area already disturbed by development</i>
Interstate 84 – Southern Route	93.4	4.8	0.0	88.6	41.3	42.0	4.5	This alternative route was developed based on comments on the Draft EIS to parallel Interstate 84, turn south and continue south along the route-variation option as recommended by the CTUIR DNR to a point where the route intersects with and follows the southern route recommended by Morrow and Umatilla counties east. This route was developed to parallel Interstate 84 in areas already disturbed by development, avoid crossing through a cultural landscape in the McKay Creek area, avoid crossing the Umatilla Indian Reservation, and avoid crossing areas of denser agriculture to the north along the Applicant’s Proposed Action Alternative.
<b>Segment 2—Blue Mountains (Map S-3b)</b>								
Applicant’s Proposed Action	33.8	2.1	0.0	31.7	4.9	26.3	3.8	This alternative route, which was analyzed in the Draft EIS, originally was developed in response to concerns about the route’s visibility from La Grande, Oregon; proximity to the Ladd Marsh Wildlife Area, and various considerations of landowners, environmental resources, and constructability of the proposed line.
Variation S2-A2 (Map S-3b, Area A)	2.9	2.5	0.0	0.4	2.9	0.0	86.2	<i>This route variation was developed to collocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line within the USFS-designated utility corridor.</i>

Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
Variation S2-B2 (Map S-3b, Area B)	3.8	0.0	0.0	3.8	2.6	1.2	0.0	<i>This route variation was developed to collocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line and is just east of the Applicant's Proposed Action Alternative.</i>
Variation S2-C2 (Map S-3b, Area C)	8.8	0.0	0.0	8.8	1.6	7.0	0.0	<i>This route variation was developed in response to comments on the Draft EIS to avoid a concentration of elk population.</i>
Variation S2-E2 (Map S-3b, Area E)	2.6	0.0	0.0	2.6	0.4	2.2	0.0	<i>This route variation was developed to collocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line.</i>
Variation S2-F2 (Map S-3b, Area F)	12.2	0.0	0.0	12.2	11.5	0.7	0.0	<i>This route variation was developed to collocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line.</i>
Glass Hill	33.7	1.8	0.0	31.9	5.5	24.9	3.9	This alternative route, addressed in the Draft EIS, was developed in response to concerns about the Applicant's Proposed Action Alternative and its visibility from La Grande, Oregon; proximity to the Ladd Marsh Wildlife Area, and various considerations of landowners, environmental resources, and constructability of the proposed line.
Variation S2-D2 (Map S-3b, Area D))	4.1	0.0	0.0	4.1	0.7	2.3	0.0	<i>This route variation to the south of the Glass Hill Alternative was developed in response to comments on the Draft EIS to avoid areas of sensitive resources (e.g., concentration of elk population) and visual impacts.</i>
Mill Creek	34.0	2.5	0	31.5	27.8	5.6	7.4	This alternative route was developed based on comments on the Draft EIS from Union County to parallel the existing 230-kV transmission line except for a deviation to the west in the area of La Grande.

Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
<b>Segment 3—Baker Valley (Map S-3c)</b>								
Applicant's Proposed Action	55.2	15.1	0.0	40.1	20.2	28.4	2.5	This alternative route, addressed in the Draft EIS, was developed parallel to an existing 230-kV transmission line, with a separation of approximately 1,500 feet, to a point east of Baker City where it diverts from the 230-kV line to the east to avoid the National Oregon Trail Interpretive Center (NHOTIC), avoid private land and agricultural areas, and maximize crossing BLM-administered land; then parallel an existing 138-kV line along the southern portion of Segment 3 to the extent practicable. In the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.
Variation S3-A2 (Map S-3c, Area A)	8.9	5.8	0.7	2.4	11.6	0.6	30.3	<i>This route variation, applicable to all alternative routes along the northern portion of Segment 3 except the Applicant's Proposed Action Alternative, was developed to colocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line.</i>
Variation S3-B2 (Map S-3c, Area B)	14.1	10.3	2.8	1.0	5.4	8.6	73.0	<i>This route variation was developed based on comments on the Draft EIS to follow section lines on private lands to reduce effects on private lands and irrigated agricultural operations. Also, in the area east of Baker City, instead of multiple crossings of the existing 230-kV line, the Applicant would consider relocating approximately 0.9 mile the existing 230-kV line to the west side of the gap and locate the proposed 500-kV line on the east side of the gap.</i>
Variation S3-B3 (Map S-3c, Area B)	14.7	0.0	0.0	14.7	8.9	5.5	0.0	<i>This route variation, based on comments on the Draft EIS and further discussion with Baker County between the Draft and Final EIS, was developed to parallel a portion of the existing 230-kV</i>

Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								<i>transmission line through a gap in the terrain to reduce visual impacts from the NHOTIC, then proceed southeast around an area of irrigated agriculture, and then southwest to intersect with and parallel the existing 230-kV line and then southeast paralleling the existing 138-kV line to the extent practicable along the southern portion of this route variation. As is the case along Variation S3-B2, in the area east of Baker City, instead of multiple crossings of the existing 230-kV line, the Applicant would consider relocating approximately 0.9 mile of the existing 230-kV line to the west side of the gap and locate the proposed 500-kV line on the east side of the gap.</i>
Variation S3-B4 (Map S-3c, Area B)	14.3	0.0	0.0	14.3	9.5	4.8	0.0	<i>This route variation was developed to colocate closer to the 230-kV line (than Variation S3-B5) to the extent practicable and then follow the 138-kV line along the southern portion of the route variation.</i>
Variation S3-B5 (Map S-3c, Area B)	14.0	0.3	0.0	13.7	3.9	9.5	0.0	<i>This route variation, addressed in the Draft EIS, was developed to avoid Greater Sage-Grouse Priority Habitat Management Areas (PHMA) and parallel the existing 230-kV transmission line and then follow the 138-kV line along the southern portion of the route variation (with a separation of 1,500 feet).</i>
Variation S3-C2 (Map S-3c, Area C)	21.7	5.8	0.0	15.9	13.3	5.0	0.0	<i>This route variation parallels the Applicant's Proposed Action Alternative in this area with a deviation developed to colocate with the existing 138-kV transmission line and to be within sections of West-Wide Energy Corridor along the northern portion of the route variation. In the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.</i>



Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
Variation S3-C3 (Map S-3c, Area C)	21.1	5.7	0.0	15.4	10.6	6.2	6.6	<i>This route variation, addressed in the Draft EIS, was developed to avoid Greater Sage-Grouse habitat and parallel a portion of the existing 138-kV transmission line west of Durkee. As is the case along Variation S3-C3, in the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.</i>
Variation S3-C4 (Map S-3c, Area C)	21.4	6.0	0.0	15.4	10.9	6.2	6.5	<i>This route variation is based on comments on the Draft EIS to cross at the mouth of Burnt River Canyon to avoid irrigated agriculture and reduce visual impacts in the canyon. As is the case along Variations S3-C2 and S3-C3, in the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.</i>
Variation S3-C5 (Map S-3c, Area C)	21.0	7.2	0.0	13.8	2.2	9.3	0.0	<i>This route variation is based on comments received from Baker County between the Draft and Final EIS to reduce impacts on irrigated agriculture, avoid impacts on Greater Sage-Grouse General Habitat Management Areas (GHMA) reduce number of Interstate 84 crossings by the proposed transmission line, and reduce visual impacts on the Oregon National Historic Trail (NHT) and the Oregon Trail Area of Critical Environmental Concern (ACEC).</i>
Variation S3-C6 (Map S-3c, Area C)	24.7	10.5	0.0	14.2	3.4	9.8	0.0	<i>This route variation is based on comments on the Draft EIS to create more distance from the community of Durkee and avoid agricultural lands.</i>
Flagstaff A	55.3	9.9	0.0	45.4	22.1	28.7	2.5	<i>This alternative route, addressed in the Draft EIS, parallels and is colocated closer to the 230-kV line in the north, then at a point northeast of Baker City, the route proceeds south, west of the</i>

Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								Applicant's Proposed Action Alternative, the intent of which is to avoid Greater Sage-Grouse PHMA in the Baker Valley and visual impacts on the NHOTIC and Oregon NHT segments in the area east of Baker City. The route turns to the southeast paralleling the 138-kV line, intersects with and follows the same route as the Applicant's Proposed Action Alternative to the end of Segment 3. As is the case with the Applicant's Proposed Action Alternative, in the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.
Timber Canyon	70.3	28.1	0.0	42.2	16.3	40.8	2.0	This alternative, addressed in the Draft EIS, was developed to the north, east, and south of Greater Sage-Grouse PHMA in the Baker Valley and visual impacts on the NHOTIC, Oregon NHT segments, and concerns about visibility of the proposed transmission line from Baker Valley. The alternative route joins the Applicant's Proposed Action Alternative route north of Weatherby and parallels the existing 138-kV line from Weatherby south to the end of Segment 3. As is the case with the Applicant's Proposed Action Alternative, in the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.
Flagstaff A – Burnt River Mountain	55.3	8.0	0.0	47.3	22.4	27.8	2.5	This alternative route, addressed in the Draft EIS, is the same as Flagstaff A Alternative in the north then diverges southeasterly south of the Straw Ranch Creek area, parallels a 138-kV line, crosses Interstate 84 between Hill Creek and Alder Creek, then south crossing the Burnt River, then continues to head south and southeast until it parallels a 138-kV line before crossing Interstate

Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								84 near Weatherby, continues south and crosses Interstate 84 again and then heads near Dixie at the end of Segment 3. This alternative route was developed to avoid Greater Sage-Grouse PHMA and GHMA to the east and golden eagle nests in the vicinity of Durkee.
Flagstaff B	56.0	9.6	0.0	46.4	27.1	24.6	2.5	This alternative route is the same as Flagstaff A (parallels the 230-kV line) to a point northeast of Baker City where it diverges to the east along the western edge of the Greater Sage-Grouse PHMA, the intent of which is to follow sections lines on private land to reduce impacts on agricultural operations. The route continues south toward Interstate 84, then turns east paralleling the existing 138-kV line, intersects with and follows the same route as the Applicant's Proposed Action Alternative and Flagstaff A Alternative to the end of the Segment 3. Also, in the area east of Baker City, instead of multiple crossings of the existing 230-kV line, the Applicant would consider relocating the existing 230-kV line to the west side of the gap and locate the proposed 500-kV line on the east side of the gap. In addition, as is the case with the Applicant's Proposed Action Alternative, in the Weatherby area, the Applicant would consider relocating the existing 138- and 69-kV lines and rebuilding as a double-circuit 138/69-kV line within existing right-of-way for approximately 5.3 miles.
Flagstaff B – Burnt River West	55.7	8.3	0.0	47.4	28.7	17.1	0.0	This alternative route is the same as the Flagstaff B Alternative to the southeast of Straw Creek Ranch where it proceeds south and then southeast (west of the Flagstaff A – Burnt River Mountain Alternative), passes to the north of Baldy Mountain and Juniper Mountain, and then south of Weatherby Mountain to the end of Segment 3. This route was developed in coordination with Baker County to avoid agricultural lands and the community of Durkee.

Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								As is the case with the Flagstaff B Alternative route, in the area east of Baker City, instead of multiple crossings of the existing 230-kV line, the Applicant would consider relocating approximately 0.9 mile of the existing 230-kV line to the west side of the gap and locate the proposed 500-kV line on the east side of the gap.
Flagstaff B – Durkee	59.6	12.5	0.0	47.1	20.3	27.3	0.0	This alternative route is the same as the Flagstaff B Alternative to the southeast of Straw Creek Ranch where it proceeds south west of Baldy Mountain to the north of Pedro Mountain, then turns and proceeds east to the end of Segment 3. This southern portion of the route was developed based on comments received on the Draft EIS from Baker County. The intent is to distance the proposed transmission line from the community of Durkee and avoid crossing agricultural lands. As is the case with the Flagstaff B Alternative and Flagstaff B – Burnt River West Alternative routes, in the area east of Baker City, instead of multiple crossings of the existing 230-kV line, the Applicant would consider relocating approximately 0.9 mile of the existing 230-kV line to the west side of the gap and locate the proposed 500-kV line on the east side of the gap.
Segment 4—Brogan (Map S-3d)								
Applicant's Proposed Action	40.1	20.2	2.9	17.0	4.0	16.0	0.0	This alternative route, addressed in the Draft EIS, parallels an existing 138-kV line, with a separation of approximately 1,500 feet, from the beginning of Segment 4 to northwest of Huntington where it diverges to the west, around Brogan and Pole Creek Reservoir, then southeast to the end of the segment. It crosses a mix of BLM, state, and private lands.

Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
Variation S4-A2 (Map S-3d, Area A)	6.0	0.7	0.0	5.3	5.7	0.2	0.0	<i>This route variation located at the northern end of Segment 4 was developed to colocate the alignment of the proposed transmission line closer to a portion of the existing 138-kV transmission line on the east side of the line.</i>
Variation S4-A3 (Map S-3d, Area A)	6.1	0.8	0.0	5.3	4.9	1.1	0.0	<i>This route variation was developed to connect more directly with the Burnt River West and the Durkee alternatives and then to colocate the alignment of the proposed transmission line closer to a portion of the existing 138-kV transmission line on the west side of the route variation.</i>
Tub Mountain	40.5	25.7	0.0	14.8	9.9	18.3	11.1	This alternative route, addressed in the Draft EIS, is the same as the Willow Creek Alternative in the north (i.e., parallels the 138-kV line), then diverges southwest paralleling Interstate 84 to just south of the Farewell Bend area, then turns south through Alkali Flats, then southwest (north of Bully Creek Reservoir) to the end of Segment 4. The route was developed to avoid Greater Sage-Grouse PHMA.
Willow Creek	34.6	15.2	0.0	19.4	6.6	19.1	0.0	This alternative route, addressed in the Draft EIS, was developed to cross less Greater Sage-Grouse PHMA than the Applicant's Proposed Action Alternative.
<b>Segment 5—Malheur (Map S-3e)</b>								
Applicant's Proposed Action	40.4	31.2	0.0	9.2	8.7	16.2	30.2	This alternative route, addressed in the Draft EIS, was developed to avoid lands with wilderness characteristics in the Double Mountain area, use portions of the BLM-designated utility corridor along the southern portion of Segment 5.
Variation S5-A2 (Map S-3e, Area A)	7.4	7.4	0.0	0.0	0.5	2.6	0.0	<i>This route variation, in the Double Mountain area (the Double Mountain Alternative in the Draft EIS), was developed to maximize use of public lands (it is entirely on BLM-administered land) and, although the route crosses lands with wilderness</i>

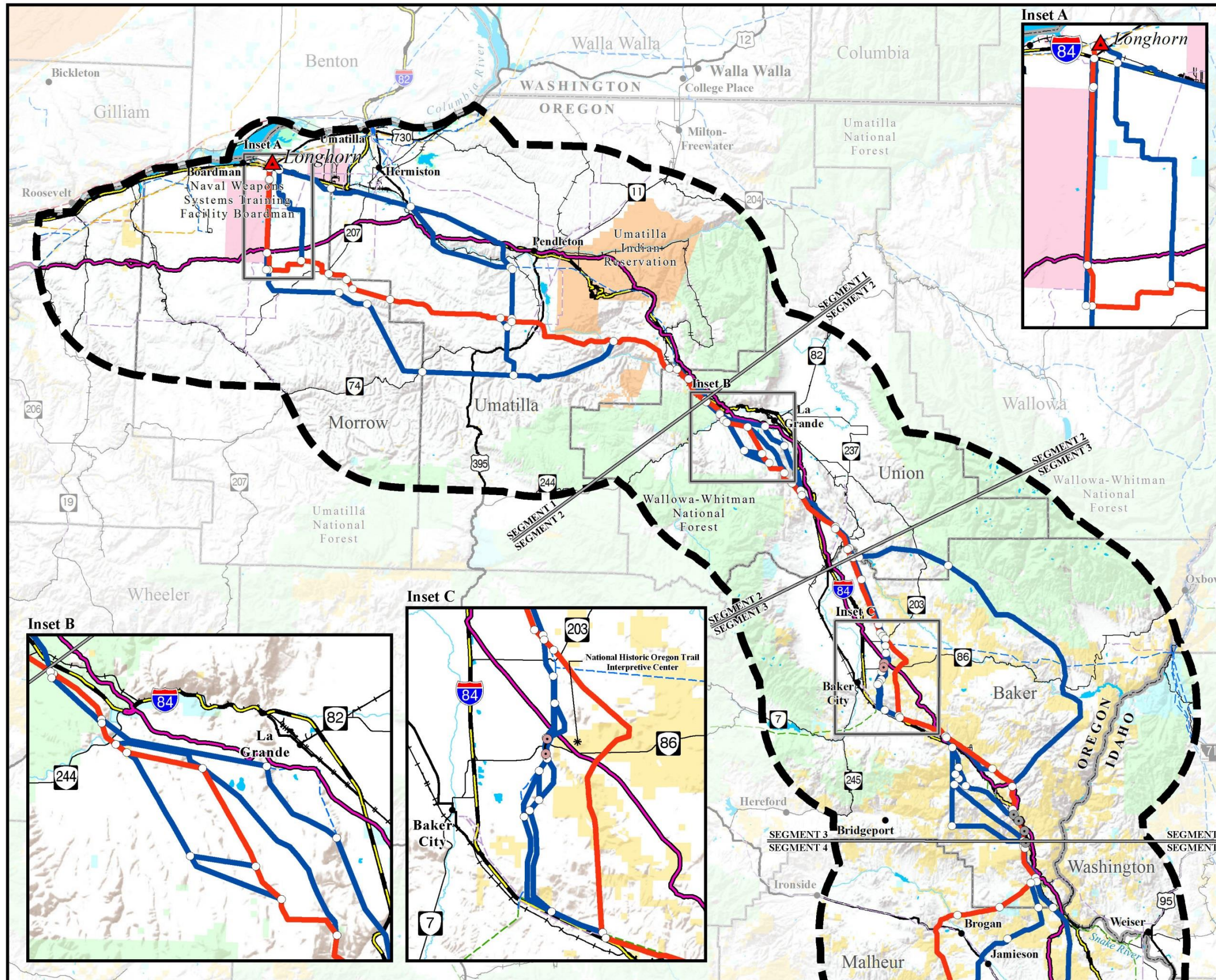


Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
								<i>characteristics, the route would avoid private range and farmland to the northeast.</i>
Variation S5-B2 (Map S-3e, Area B)	2.8	1.5	0.0	1.3	0.6	2.2	46.4	<i>This route variation is at the crossing of the Owyhee River, was developed by the BLM between the Draft and Final EIS to avoid crossing the river in the area determined suitable as Wild and Scenic River and remain in a BLM-designated utility corridor to the extent practicable.</i>
Malheur S	43.5	39.7	0.0	3.8	7.3	18.3	20.0	This alternative, addressed in the Draft EIS, was developed to avoid privately owned farmland, maximize use of public land, reduce the number of miles crossing through the Owyhee Below the Dam ACEC, and avoid lands with wilderness characteristics administered by the BLM. Along the southern portion, the route is within a BLM-designated utility and within, or parallel to, the north side of a West-wide Energy Corridor.
Malheur A	43.1	38.7	0.0	4.4	4.8	20.6	14.2	This alternative route, addressed in the Draft EIS, is the same as Malheur S to a point west of the Owyhee Dam where the route diverges to the southeast to be within or closely parallel the south side of a West-wide Energy Corridor (containing an existing 500-kV transmission line) along the southern portion of the route to the end of Segment 5.
Segment 6—Treasure Valley (Map S-3f)								
Applicant's Proposed Action	28.0	21.4	2.4	4.2	6.9	17.7	40.7	This route, addressed in the Draft EIS, enters Owyhee County approximately 1.5 miles south of Graveyard Point and is generally parallel to but offset from a 500-kV transmission line. At about the point where the alternative route crosses U.S. Highway 95, the route enters and continues roughly in the center of a West-wide Energy Corridor (except for one area of private land) nearly to the Hemingway Substation.

Table S-1. Alternative Routes and Route Variations Analyzed								
Alternative Route	Total Length (Miles)	Jurisdiction Crossed (Miles)			Miles Parallel to Linear Facilities		Percent Within Designated Utility Corridor	Description
		Federal	State	Private	Within 300 Feet	Within 300 to 2,000 Feet		
Variation S6-A2 (Map S-3f, Area A)	8.9	5.8	0.7	2.4	1.3	7.1	30.3	<i>This route variation was developed to be along and within the southern edge of the West-Wide Energy Corridor and colocated closer to the existing 500-kV transmission line where practicable.</i>
Variation S6-B2 (Map S-3f, Area B)	14.1	10.3	2.8	1.0	4.1	7.8	73.0	<i>This route variation was developed to be along and within the southern edge of the West-Wide Energy Corridor to use the corridor more efficiently, allowing for future use of the corridor.</i>

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Map S-2a  
**Alternative Routes Analyzed  
for the Final EIS  
(Northern Area)**

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BOARDMAN TO HEMINGWAY  
TRANSMISSION LINE PROJECT

**Project Features**

Project Area Boundary	Link Node
Substation (Project Terminal)	Segment Line
Applicant's Proposed Action Alternative	Flagstaff 230-kV Rebuild (Inset C)
Alternative Route	Double-circuit 138/69-kV Rebuild (Inset D)

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	Other Federal
National Park Service	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
500-kV Transmission Line	U.S. Highway
345-kV Transmission Line	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013; Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007, Logan Simpson Design 2011, Ventyx 2012; Pipelines, ESRI 2012; Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**  
• The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.  
• Substation symbols do not necessarily represent precise locations.  
• The B2H Project area boundary is defined by buffering the alternative route centerlines.  
• Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).  
• Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.  
• No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

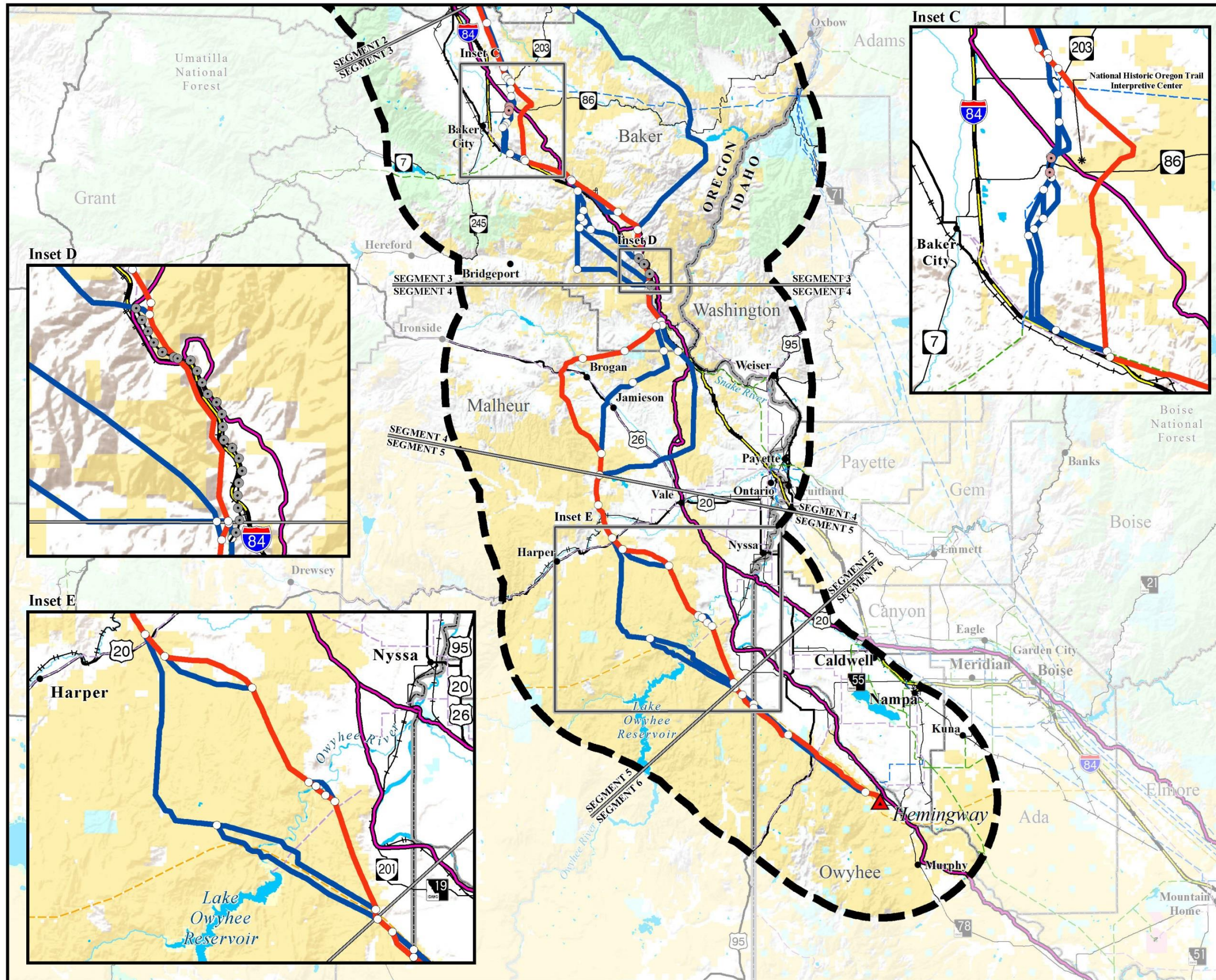
Alternative routes last revised: February 18, 2016  
Final EIS: November 2016

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Miles  
1:950,400 or 1 inch = 15 miles



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Map S-2b  
**Alternative Routes Analyzed  
for the Final EIS  
(Southern Area)**

BOARDMAN TO HEMINGWAY  
TRANSMISSION LINE PROJECT

**Project Features**

Project Area Boundary	Link Node
Substation (Project Terminal)	Segment Line
Applicant's Proposed Action Alternative	Flagstaff 230-kV Rebuild (Inset C)
Alternative Route	Double-circuit 138/69-kV Rebuild (Inset D)

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	Other Federal
National Park Service	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
500-kV Transmission Line	U.S. Highway
345-kV Transmission Line	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013; Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007, Logan Simpson Design 2011, Ventyx 2012; Pipelines, ESRI 2012; Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**

- The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
- Substation symbols do not necessarily represent precise locations.
- The B2H Project area boundary is defined by buffering the alternative route centerlines.
- Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).
- Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.
- No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

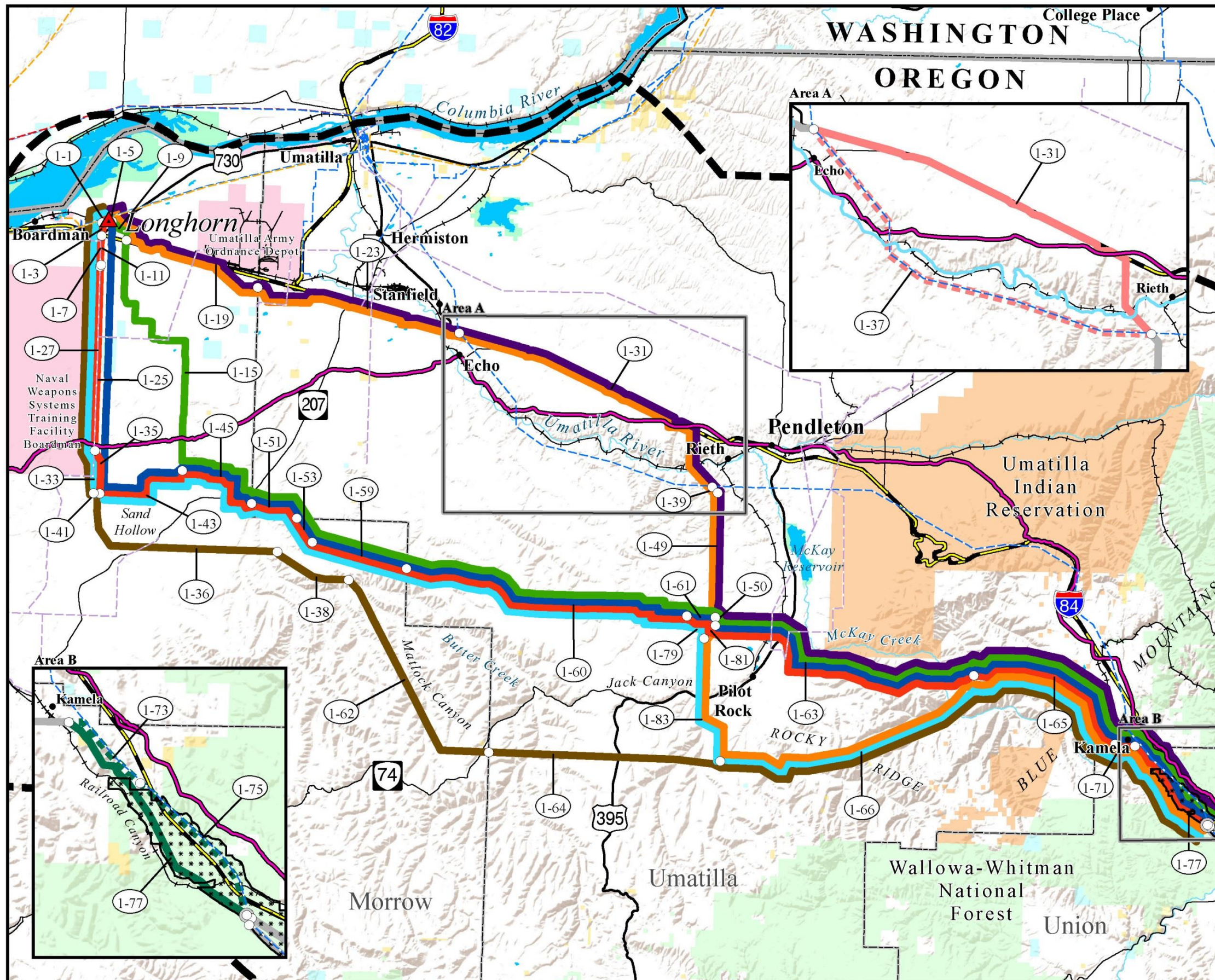
Alternative routes last revised: February 18, 2016  
Final EIS: November 2016

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Miles  
1:950,400 or 1 inch = 15 miles



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Map S-3a  
**Segment 1**  
**Morrow-Umatilla**

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**BOARDMAN TO HEMINGWAY  
TRANSMISSION LINE PROJECT**

**Alternative Routes<sup>1,2</sup>**

Applicant's Proposed Action Alternative	West of Bombing Range Road - Southern Route Alternative
East of Bombing Range Road Alternative	Longhorn Alternative
Applicant's Proposed Action - Southern Route Alternative	Interstate 84 Alternative
	Interstate 84 - Southern Route Alternative

**Variations**

AREA A Variation S1-A1	AREA B Variation S1-B1
AREA A Variation S1-A2	AREA B Variation S1-B2

**Project Features**

Project Area Boundary	Link Node
Substation (Project Terminal)	Segment Node
Link Number	

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
Land and Resource Management Plan Utility Corridor	U.S. Highway
500-kV Transmission Line	State Highway
345-kV Transmission Line	Lake or Reservoir
230-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; Land and Resource Management Plan Utility Corridors, USFS 2010; Transmission Lines, Ventyx 2012; Logan Simpson Design 2011; Bonneville Power Administration 2009; Idaho Power Company 2007; Substations, EPG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**  
 1. Alternative routes are depicted graphically on map and, in most cases, share centerline alignment in common areas.  
 2. Alternative routes, but not route variations, are shown within the overall geographic extent.  
 3. The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.  
 4. Substation symbols do not necessarily represent precise locations.  
 5. The B2H Project area boundary is defined by buffering the alternative route centerlines.  
 6. Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).  
 7. Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.  
 8. No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

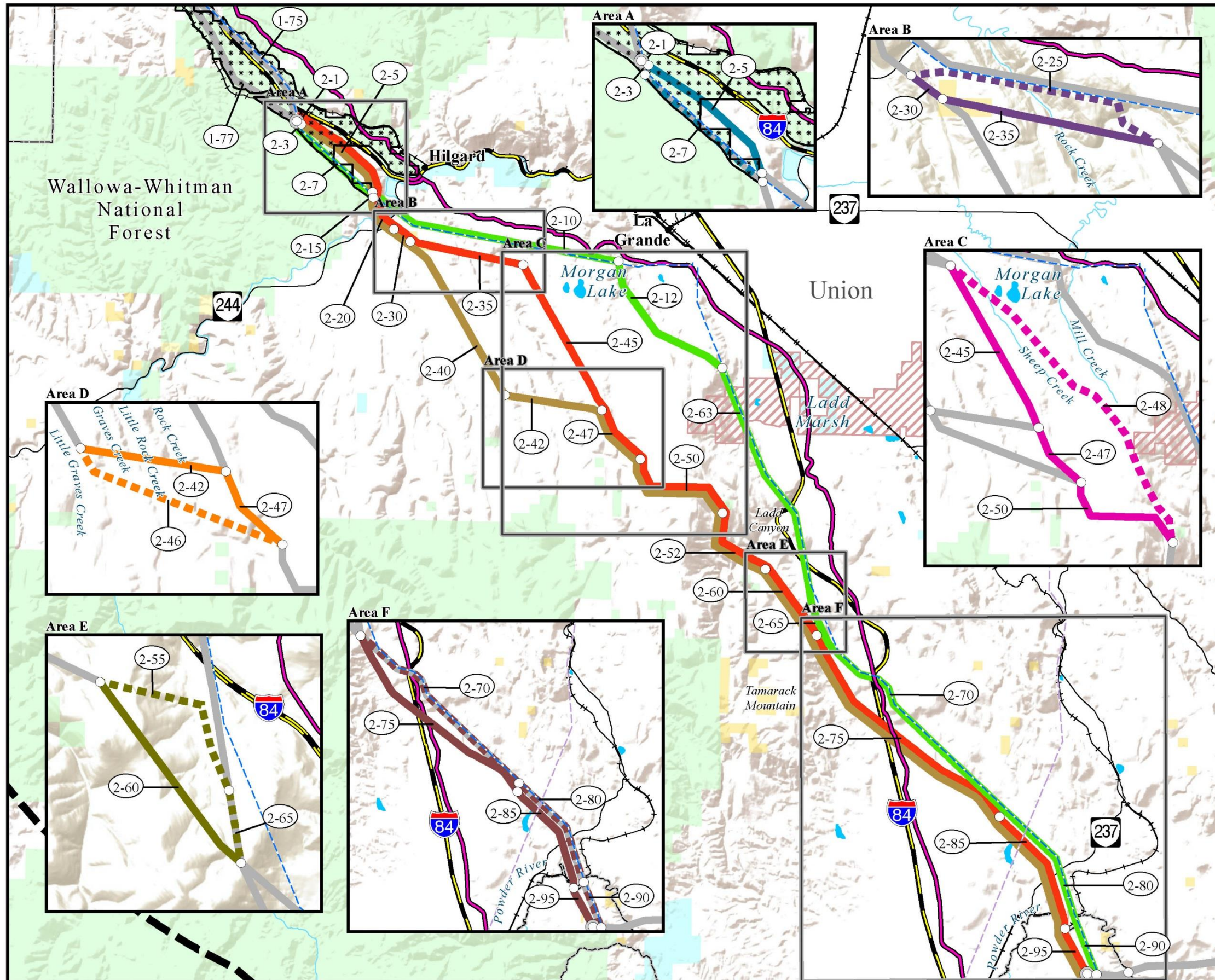
Alternative routes last revised: February 18, 2016  
Final EIS: November 2016

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Miles  
1:375,000 or 1 inch = 6 miles



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### Map S-3b Segment 2 Blue Mountains

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#### BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

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**Alternative Routes<sup>1,2</sup>**

Applicant's Proposed Action Alternative	Mill Creek Alternative
Glass Hill Alternative	

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**Variations**

AREA A Variation S2-A1 Variation S2-A2	AREA B Variation S2-B1 Variation S2-B2
AREA C Variation S2-C1 Variation S2-C2	AREA D Variation S2-D1 Variation S2-D2
AREA E Variation S2-E1 Variation S2-E2	AREA F Variation S2-F1 Variation S2-F2

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**Project Features**

Project Area Boundary	Link Node
Link Number	Segment Node

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**Land Ownership**

Bureau of Land Management	State Land
Bureau of Reclamation	Private Land
U.S. Forest Service	

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**General Reference**

City or Town	Interstate Highway
Land and Resource Management Plan Utility Corridor	State Highway
Ladd Marsh Wildlife Management Area	Lake or Reservoir
230-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

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**SOURCES:**  
 Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; Land and Resource Management Plan Utility Corridors, USFS 2010; Transmission Lines, Vestyx 2012; Logan Simpson Design 2011; Bonneville Power Administration 2009; Idaho Power Company 2007; Substations, EPG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Wildlife Management Areas, IDFG 2012, ODFW 2014; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**  
<sup>1</sup>Alternative routes are depicted graphically on map and, in most cases, share centerline alignment in common areas.  
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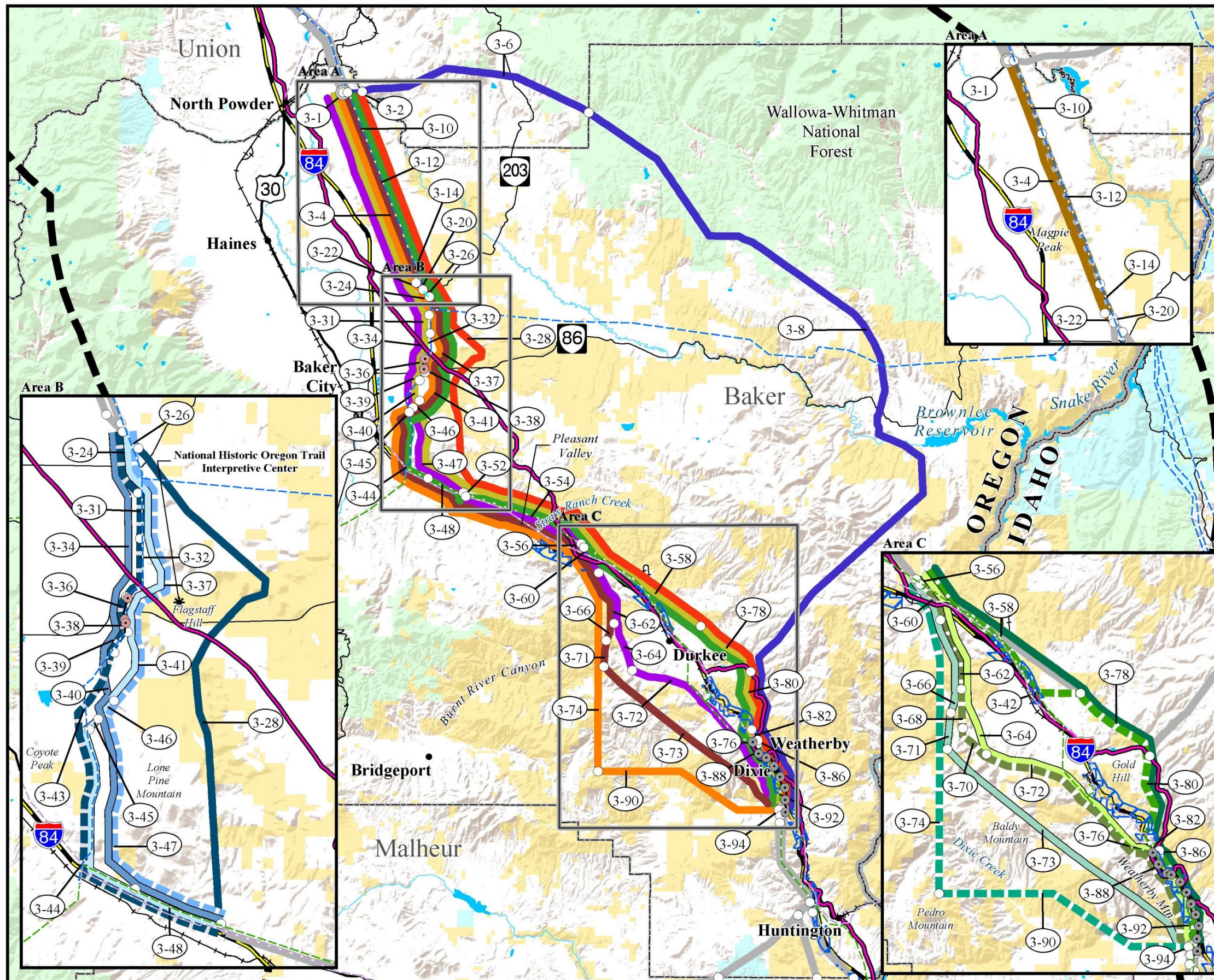
Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

1:175,000 or 1 inch = 3 miles



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### Map S-3c Segment 3 Baker Valley

#### BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

**Alternative Routes<sup>1,2</sup>**

Applicant's Proposed Action Alternative	Flagstaff A - Burnt River Mountain Alternative
Flagstaff A Alternative	Flagstaff B Alternative
Timber Canyon Alternative	Flagstaff B - Burnt River West Alternative
	Flagstaff B - Durkee Alternative

**Variations**

AREA A Variation S3-A1	Variation S3-A2
AREA B Variation S3-B1	Variation S3-B4
Variation S3-B2	Variation S3-B5
Variation S3-B3	
AREA C Variation S3-C1	Variation S3-C4
Variation S3-C2	Variation S3-C5
Variation S3-C3	Variation S3-C6

**Project Features**

Project Area Boundary	Segment Node
Link Number	Flagstaff 230-kV Rebuild (Area B)
Link Node	Double-circuit 138/69-kV Rebuild (Area C)

**Land Ownership**

Bureau of Land Management	State Land
Bureau of Reclamation	Private Land
U.S. Forest Service	

**General Reference**

City or Town	Interstate Highway
West-wide Energy Corridor	U.S. Highway
National Historic Oregon Trail Interpretive Center	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
 Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; National Historic Oregon Trail Interpretive Center, BLM 2010, 2015; Transmission Lines, Ventyx 2012, Logan Simpson Design 2011, Bonneville Power Administration 2009, Idaho Power Company 2007; West-wide Energy Corridors, Argonne National Laboratory 2008; Substations, EFG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**  
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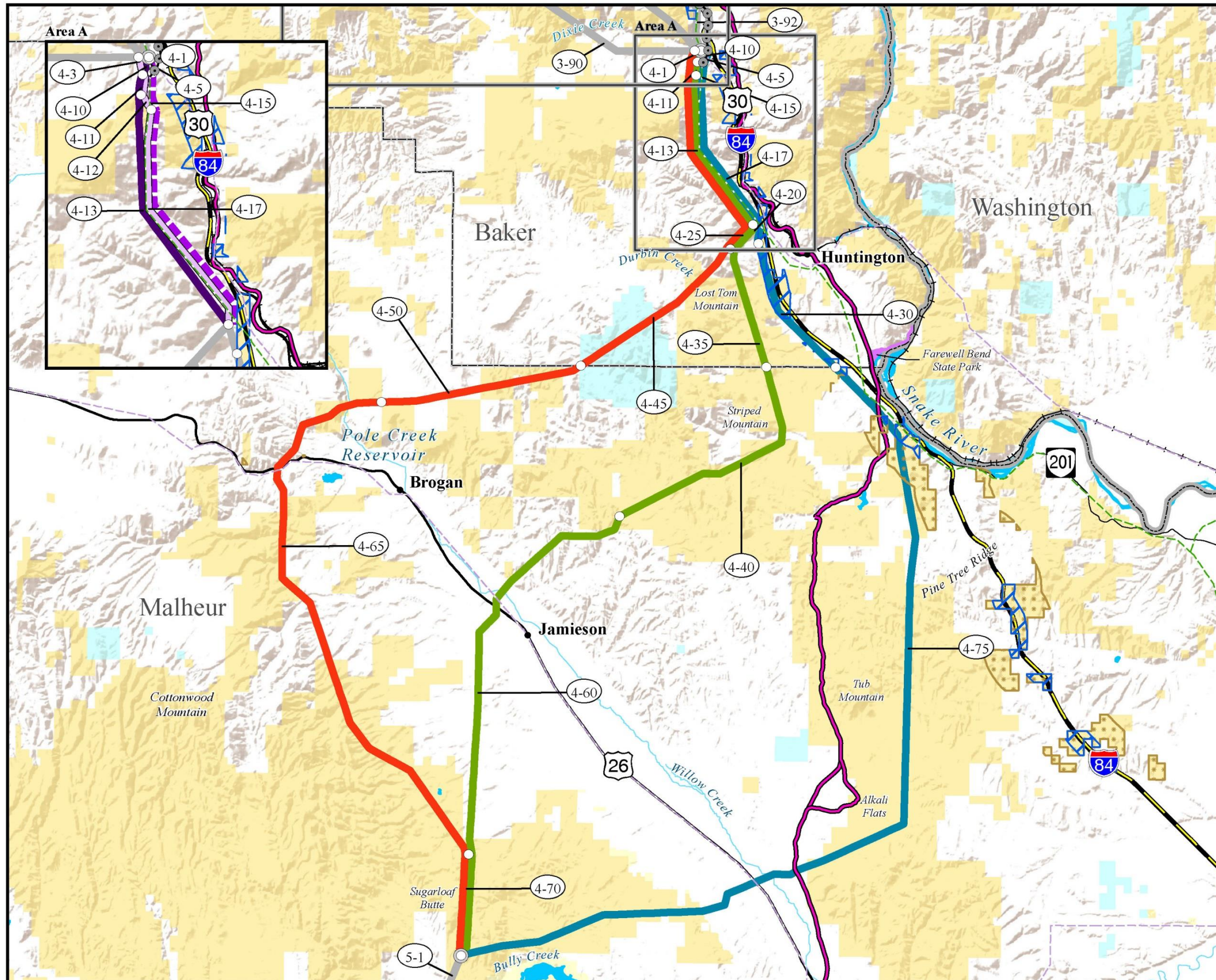
Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

1:375,000 or 1 inch = 6 miles



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Map S-3d  
**Segment 4  
Brogan**

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**BOARDMAN TO HEMINGWAY  
TRANSMISSION LINE PROJECT**

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**Alternative Routes<sup>1,2</sup>**

<span style="color: red;">—</span> Applicant's Proposed Action Alternative	<span style="color: green;">—</span> Willow Creek Alternative
<span style="color: blue;">—</span> Tub Mountain South Alternative	

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**Variations**

<span style="color: purple;">—</span> Variation S4-A1	<span style="color: pink;">—</span> Variation S4-A3
<span style="color: magenta;">—</span> Variation S4-A2	

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**Project Features**

<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Link Number</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Segment Node</span>
<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Link Node</span>	<span style="border: 1px solid black; border-radius: 50%; padding: 2px;">Double-circuit 138/69-kV Rebuild (Area A)</span>

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**Land Ownership**

<span style="background-color: yellow; border: 1px solid black; width: 15px; height: 10px;"></span> Bureau of Land Management	<span style="background-color: cyan; border: 1px solid black; width: 15px; height: 10px;"></span> State Land
<span style="background-color: lightyellow; border: 1px solid black; width: 15px; height: 10px;"></span> Bureau of Reclamation	<span style="border: 1px solid black; width: 15px; height: 10px;"></span> Private Land

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**General Reference**

<span style="color: black;">●</span> City or Town	<span style="border-bottom: 2px solid black; width: 20px;"></span> Interstate Highway
<span style="border: 1px solid black; padding: 2px;">Resource Management Plan Utility Corridor</span>	<span style="border-bottom: 2px solid black; width: 20px;"></span> U.S. Highway
<span style="border: 1px solid blue; padding: 2px;">West-wide Energy Corridor</span>	<span style="border-bottom: 2px solid black; width: 20px;"></span> State Highway
<span style="background-color: magenta; border: 1px solid black; width: 15px; height: 10px;"></span> Farewell Bend State Park	<span style="background-color: cyan; border: 1px solid black; width: 15px; height: 10px;"></span> Lake or Reservoir
<span style="border-bottom: 1px dashed green; width: 20px;"></span> 138-kV Transmission Line	<span style="border-bottom: 1px dashed black; width: 20px;"></span> County Boundary
<span style="border-bottom: 1px dashed purple; width: 20px;"></span> 69- to 115-kV Transmission Line	<span style="border-bottom: 2px solid black; width: 20px;"></span> Oregon National Historic Trail Congressionally Designated Alignment
<span style="border-bottom: 1px solid black; width: 20px;"></span> Railroad	

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**SOURCES:**  
Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; Resource Management Plan Utility Corridors, BLM 2015; West-wide Energy Corridors, Argonne National Laboratory 2008; Transmission Lines, Ventyx 2012, Logan Simpson Design 2011, Bonneville Power Administration 2009, Idaho Power Company 2007; Substations, EPG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

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Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

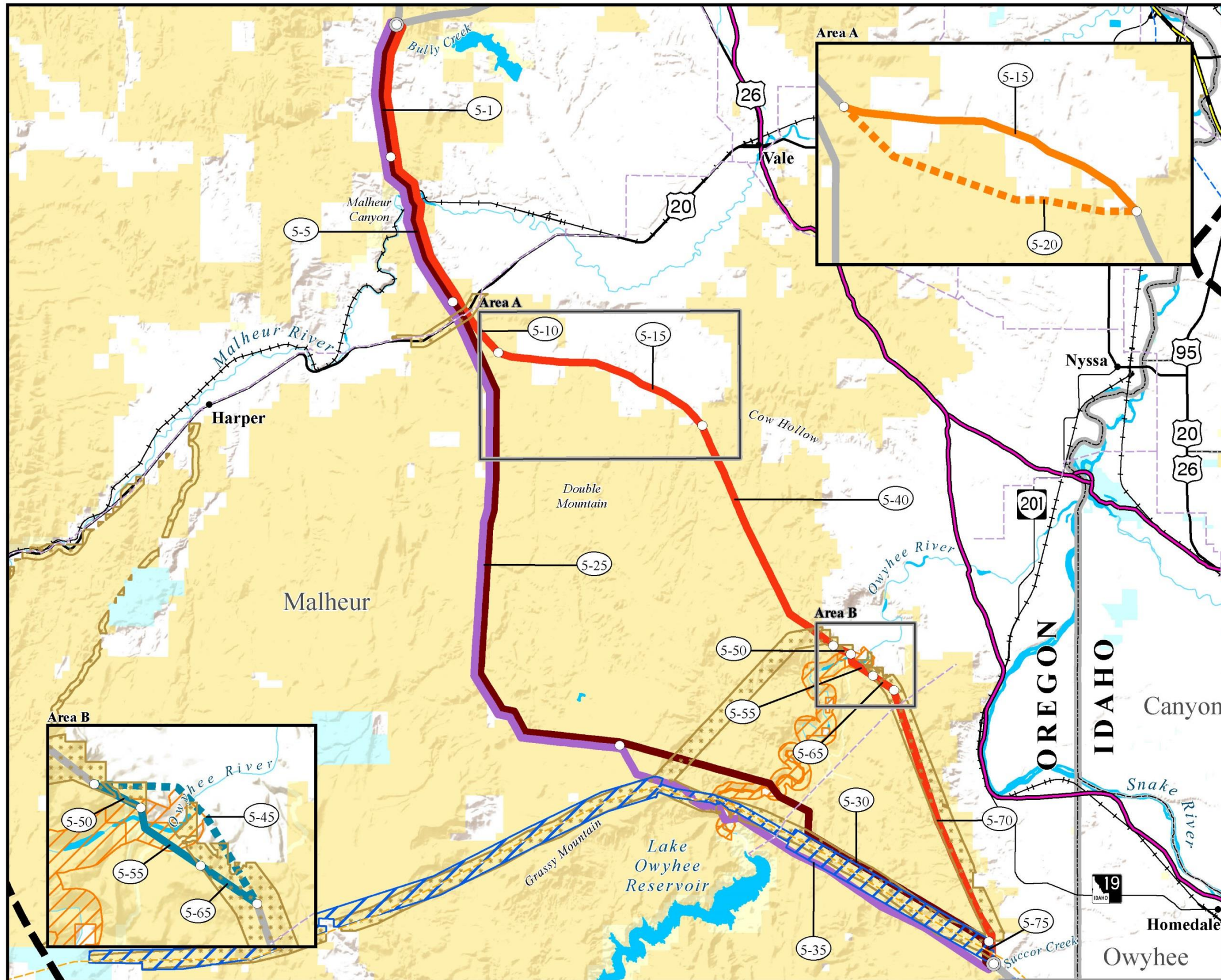
0      2.5      5  
Miles

1:200,000 or 1 inch = 3 miles



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**Map S-3e**  
**Segment 5 Malheur**

**BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT**

**Alternative Routes<sup>1,2</sup>**

Applicant's Proposed Action Alternative	Malheur A Alternative
Malheur S Alternative	

**Variations**

<b>AREA A</b>	<b>AREA B</b>
Variation S5-A1	Variation S5-B1
Variation S5-A2	Variation S5-B2

**Project Features**

Project Area Boundary	Link Node
Link Number	Segment Node

**Land Ownership**

Bureau of Land Management	State Land
Bureau of Reclamation	Private Land

**General Reference**

City or Town	Railroad
Resource Management Plan Utility Corridor	U.S. Highway
West-wide Energy Corridor	State Highway
Wild and Scenic River-Determined Suitable	Lake or Reservoir
500-kV Transmission Line	State Boundary
230-kV Transmission Line	County Boundary
69- to 115-kV Transmission Line	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; Resource Management Plan Utility Corridors, BLM 2015; West-wide Energy Corridors, Argonne National Laboratory 2008; Wild and Scenic Rivers - Determined Suitable, BLM 2015; Transmission Lines, Ventyx 2012; Logan Simpson Design 2011, Bonneville Power Administration 2009, Idaho Power Company 2007; Substations, EPG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

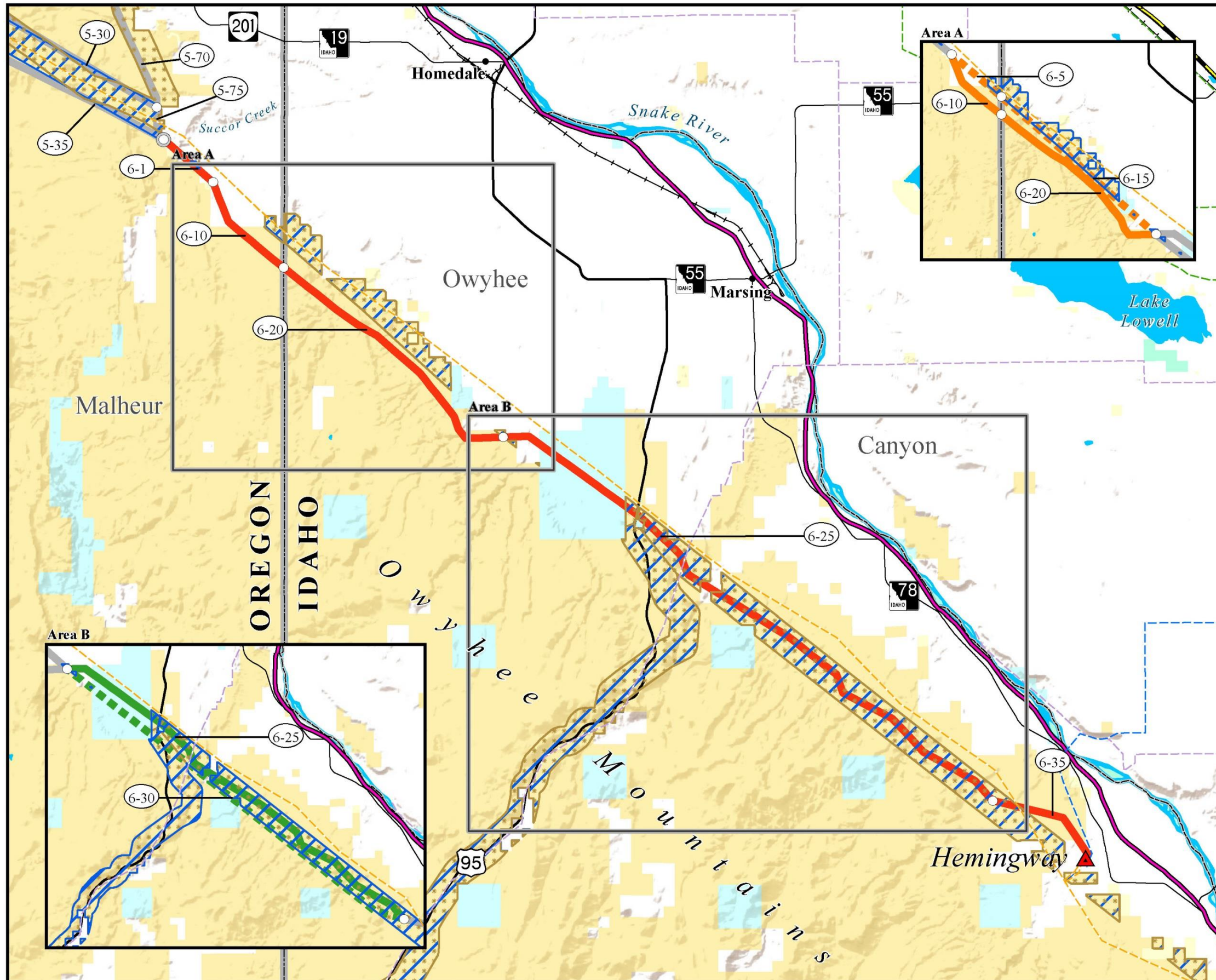
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 Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

0 2.5 5  
Miles  
1:215,000 or 1 inch = 3 miles



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Map S-3f  
**Segment 6  
 Treasure Valley**

**BOARDMAN TO HEMINGWAY  
 TRANSMISSION LINE PROJECT**

**Alternative Routes<sup>1,2</sup>**

Applicant's Proposed  
 Action Alternative

**Variations**

AREA A Variation S6-A1 Variation S6-A2	AREA B Variation S6-B1 Variation S6-B2
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**Project Features**

Substation (Project Terminal)	Link Node
Link Number	Segment Node

**Land Ownership**

Bureau of Land Management	State Land
Bureau of Reclamation	Private Land
U.S. Fish and Wildlife Service	

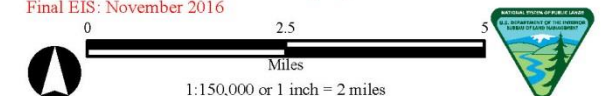
**General Reference**

City or Town	Interstate Highway
Resource Management Plan Utility Corridor	U.S. Highway
West-wide Energy Corridor	State Highway
500-kV Transmission Line	Lake or Reservoir
230-kV Transmission Line	State Boundary
138-kV Transmission Line	County Boundary
69- to 115-kV Transmission Line	Oregon National Historic Trail Congressionally Designated Alignment
Railroad	

**SOURCES:**  
 Land Jurisdiction, BLM 2014, 2015; Cities and Towns, ESRI 2013; Resource Management Plan Utility Corridors, BLM 2015; West-wide Energy Corridors, Argonne National Laboratory 2008; Transmission Lines, Ventyx 2012, Logan Simpson Design 2011, Bonneville Power Administration 2009, Idaho Power Company 2007; Substations, EPG 2015; Railroads, Idaho DOT 2006, Oregon DOT 2009; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

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Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016



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To establish a baseline of environmental resources data, the most recent data available were gathered and compiled—primarily literature, published and unpublished reports, LUP amendments, mapping, and agency databases. Comments on the Draft EIS and at agency workshops (in August and December 2015) informed the BLM of new and/or updated data, which were gathered and compiled for use in preparing the Final EIS. Once the baseline resource data were compiled for each alternative route and reviewed by the lead and cooperating agencies, potential effects of the proposed B2H Project were assessed. The process for assessing impacts and applying measures to reduce impacts is a systematic interdisciplinary analysis that first identifies initial impacts based on estimating the predicted types of impacts (project-related activities) and amounts of project-related disturbance on the existing condition of the environment (before the B2H Project). Then, measures may be applied selectively on a case-by-case basis to avoid, reduce, minimize, or eliminate impacts, thereby resulting in remaining, or residual, impacts. To maintain consistency for purposes of comparing the alternative routes, methods for each resource study and analysis were tiered and adapted from this overall approach (methods for each resource are described in Chapter 3). Once the impacts along each of the alternative routes had been analyzed for each resource, the alternative routes were screened in interdisciplinary reviews to characterize the impacts and key issues and then compared to identify the most environmentally preferable action alternative(s).

If an action alternative route is selected, it will be identified in the Record of Decision as the agency selected route and following completion of final engineering and design of the B2H Project, the Applicant would coordinate with the BLM and other land-management and regulatory agencies, as appropriate to refine mitigation at specific locations or areas based on final detailed design of the B2H Project. Results of intensive pedestrian surveys of the selected route conducted for some resources (e.g., biological resources, cultural resources, wetlands, etc.) would inform the development of the final POD for review and approval and development of the Compensatory Mitigation Plan based on the Mitigation Framework provided in Appendix C.

Additionally, compensation for residual impacts on some qualifying resources may require mitigation measures and conservation actions to achieve land-use plan goals and objectives and provide for sustained yield of natural resources on public lands, while continuing to honor the BLM's multiple-use mission. Reasonably foreseeable residual effects on resources are anticipated to remain and may warrant compensatory mitigation if the residual effects (1) would inhibit achieving compliance with laws, regulations, and/or policies; (2) would inhibit achieving land-use plan objectives; (3) have been previously identified in a mitigation strategy as warranting compensatory mitigation; and/or (4) have been identified through the NEPA process as warranting compensatory mitigation. For the B2H Project, a Mitigation Framework (EIS Appendix C) (1) establishes the process through which residual impacts would be assessed and debits quantified; (2) establishes how avoidance and minimization have eliminated and/or reduced impacts; and (3) provides a list of required standards and principles that the Applicant's entire Compensatory Mitigation Plan, including each compensatory mitigation action, must be consistent with; (4) identifies unavoidable impacts to be addressed for which a list of compensatory mitigation measures could be applied in specific areas to offset remaining residual impacts. If an action alternative route is selected, and following completion of final engineering and design, the

Compensatory Mitigation Plan will be completed using the Mitigation Framework (EIS Appendix C) as a foundation and refined to quantify direct and indirect impacts and identify a suite of site-specific compensatory mitigation options for selection and implementation under review and guidance of the appropriate agencies. The final Compensatory Mitigation Plan must be reviewed by the BLM and cooperating agencies and a recommendation made to the BLM Authorized Office for approval prior to issuing notice to proceed for any surface-disturbing activities.

The resulting detailed mitigation would be incorporated as part of the final POD (detailed guidance for construction, operation, and maintenance), also to be reviewed and approved by the BLM and cooperating agencies, prior to the Applicant receiving notice to proceed with construction.

### **INTENTIONAL ACTS OF DESTRUCTION**

Intentional acts of destruction; that is, acts of sabotage, terrorism, vandalism, and theft, sometimes occur at power utility facilities. Vandalism and thefts are most common, especially of metal and other materials that can be sold. However, given the extensive security measures that public and private utilities, energy-resource developers, and federal agencies, such as the Department of Homeland Security, have and are continuing to implement to help prevent such acts and protect their facilities, along with inherent difficulty in significantly affecting such large and well-constructed facilities as transmission line structures and substation sites., it is considered extremely remote and unlikely that a significant terrorist or sabotage act would occur.

### **KEY RESOURCE CONSIDERATIONS**

From the inclusive list of issues identified in the scoping and public involvement, many issues are avoided by design features of the B2H Project for environmental protection or implementation of selective mitigation measures required by the agencies. Also, through the effects analysis conducted for the B2H Project, some issues were found not to be substantive. However, the effects analysis also indicates that the predicted effects would vary between the alternative routes considered. Also, due to policy and/or management consideration, some resources are shown, through the results of the effects analysis, to be either pivotal to B2H Project development or principal drivers in the identification of the Agency Preferred Alternative (Maps S-5a and S-5b). These resources and key issues areas are described in this section.

In addition, land jurisdiction and the extent to which the alternative routes considered in the Final EIS are located within designated utility corridors or adjacent to existing linear utilities or other existing rights-of-way are criteria used in siting the alternative routes and selection of the route for the B2H Project (refer to Table S-1).

#### *SEGMENT 1—MORROW-UMATILLA*

Although siting constraints exist along all six segments, some of the most challenging constraints exist in Segment 1, in Morrow and Umatilla counties, with its dense, irrigated agriculture and dryland farming; existing and potential wind farm development; and sensitive resources (Washington ground squirrel habitat, cultural resources, including historic properties of religious and cultural significance to Indian

tribes). Also, the NWSTRF Boardman, a training facility on federal land withdrawn specifically for military purposes, is located at the northern portion of the B2H Project.

### *SEGMENT 2—BLUE MOUNTAINS*

Segment 2 is predominantly in Union County, which lies between the Blue and Wallowa Mountains. The geography in Union County is mountainous and predominantly forested. The city of La Grande, the county seat, lies east of the Blue Mountains in the Grande Ronde Valley. The valley is part of the Columbia River Plateau; was and is used by Native Americans for its natural resources; and, historically, was a waypoint along the Oregon Trail. The economy is based on agriculture (farming and ranching), forest products, and nearby mountains offer recreation opportunities such as hunting, fishing, camping, and skiing. The Oregon Trail passes through Union County roughly parallel to Interstate 84, which passes along the east side of La Grande. An existing 230-kV transmission line passes through Union County, also roughly parallel to Interstate 84 and passes between La Grande and the Morgan Lake area. Potential effects on National Historic Trails (NHT), including visibility from Hilgard Junction (high potential site) and views from a mostly intact segment of the Oregon NHT and/or Goodales' Cutoff Trail are issues. Also views from La Grande and Morgan Lake recreation area. In Segment 2, the proposed transmission line would cross the Wallowa-Whitman National Forest. Big game winter and summer ranges are abundant in Segment 2.

### *SEGMENT 3—BAKER VALLEY*

Segment 3 is located primarily in Baker County. A number of cities and towns are located in Segment 3, the largest of which is Baker City. In particular, concerns about visibility of the proposed transmission line from Baker Valley are an issue, as are potential effects on the residential and agricultural land uses around Baker City. The western side of Baker Valley is an agricultural area; the eastern side of Baker Valley has irrigated and dryland agriculture operations. The segment includes a portion of the Wallowa-Whitman National Forest on the easternmost route; the loss of forested habitat (and associated effects on wildlife habitat and timber products) is an issue. The National Historic Oregon Trail Interpretive Center (NHOTIC) and Oregon NHT segments are present in Segment 3. Central Baker Valley also contains Greater Sage-Grouse PHMA. Occupied habitat for big horn sheep occurs along the west bank of the Snake River.

### *SEGMENT 4—BROGAN*

Segment 4 is located in southern Baker County and northern Malheur County. The Brogan area centers on a farming area along Willow Creek characterized by irrigated agriculture and some dryland farming. The vegetation/habitat outside the agricultural areas is predominantly grassland/shrubland and sagebrush. Oregon NHT segments are present in Segment 4 including in the Oregon Trail ACEC – Birch Creek and Tub Mountain portions. Greater Sage-Grouse PHMA and GHMA for also are present in Segment 4.

### *SEGMENT 5—MALHEUR*

Segment 5 is located in Malheur County. The geography is predominantly northern Great Basin topography, hydrology, and vegetation/habitat, with agricultural (mostly grazing) and residential uses in the eastern portion of the area. A segment of the Owyhee River is eligible under the Wild and Scenic Rivers

Act (Public Law 90-542) for protection and addition to the National Wild and Scenic Rivers System (National System). This segment is referred to as the Owyhee River Below the Dam suitable WSR segment. Also, non-WSA lands with wilderness characteristics are present in the segment. Greater Sage-Grouse GHMA also is present in Segment 5.

#### *SEGMENT 6—TREASURE VALLEY*

Segment 6 is located in Owyhee County, Idaho. Irrigated agriculture and grazing are the primary land uses in the segment. Other land uses include the Hardtrigger Wild Horse and Burro Management area and Idaho state lands.

## **SUMMARY OF RESIDUAL IMPACTS**

### *EARTH RESOURCES*

#### **Geologic Hazards**

The risk interval for geological hazards during construction is temporary and short term. With preconstruction site analysis, site-specific design, and incorporation of the design features of the B2H Project for environmental protection, the risk of landslide damage to B2H Project infrastructure during construction and operations would be low.

#### **Soils**

In most B2H Project segments, the disturbances to soils and potential for reclamation success are generally similar among the alternative routes. Direct and indirect effects on soils with high or moderate erosion potential from construction of the B2H Project would be limited to the construction period and construction areas. Short-term effects would therefore be moderate with effective implementation of design features of the B2H Project for environmental protection and required erosion control design standards. With effective reclamation and implementation and long-term maintenance of erosion control measures, long-term effects on soils during operations are anticipated to be low.

#### **Minerals**

Construction and operation of the B2H Project would not displace mineral operations; therefore, there would be no identifiable impacts on mineral resources and extractive activities from the B2H Project.

#### **Paleontological Resources**

There are only minor variations on the extent of effects of the B2H Project on paleontological resources among the alternative routes, which are relative to the distance an alternative route crosses areas of high potential fossil yield. Preconstruction surveys of areas with high potential for fossil yields would be conducted on any selected route prior to construction; any resources would be excavated as specified in the Paleontological Monitoring and Mitigation Plan and Unanticipated Discovery Plan. Also, based on survey results, areas would be identified for construction monitoring by a qualified specialist. Impacts on paleontological resources would be low regardless of the route selected for construction.

## WATER RESOURCES

### **Surface Water**

Direct and indirect effects on perennial and intermittent streams and 303(d) temperature-impaired streams would be similar for all alternative routes. With implementation of design features of the B2H Project for environmental protection and selective mitigation measures required by the agencies during construction, low residual impacts on perennial streams, intermittent streams, and 303(d) listed impaired waters are anticipated as a result of temporary increases in erosion and sedimentation associated with construction, operation, and maintenance of the B2H Project.

### **Groundwater**

Effects on groundwater resources would be low. Water used for the construction would be procured from existing municipal sources or from commercial sources. Therefore, water necessary for the construction of the B2H Project would not affect existing groundwater levels. Adverse impacts on groundwater quality would be avoided through the use of spill prevention measures to be developed for the Construction POD. Water infiltration and groundwater recharge occurs at a landscape scale and the area affected by the B2H Project would result in negligible changes in infiltration rates and effects on groundwater resources.

### **Wetlands**

The B2H Project is anticipated to result in moderate residual impacts on forested wetlands and low residual impacts on scrub-shrub, emergent, and open water wetlands. Direct and indirect effects on wetlands could include temporary impacts on vegetation from construction, temporary increases in erosion and sedimentation associated with construction and maintenance of the B2H Project and temporary impacts from clearing of vegetation, including loss of shading and reduction or loss of flood water attenuation availability.

## VEGETATION

### **Vegetation Communities**

The B2H Project is anticipated to result in predominantly moderate residual impacts as the alternative routes primarily cross Tall Sagebrush Steppe vegetation communities. Low residual impacts would occur where the B2H Project crosses Non-native Grassland; Bare Ground, Cliffs, and talus; Agriculture; Developed/Disturbed; Other Forest; and Open Water vegetation communities. Moderate residual impacts would occur where the B2H Project crosses Native Grassland, Desert Shrub, Dwarf Sagebrush Steppe, Tall Sagebrush Steppe, Mountain Shrub, Mixed Conifer Forest, Aspen, Juniper and Mahogany Woodland vegetation communities, and riparian conservation areas (RCAs).

### **Federally Listed and Other Sensitive Plant Species**

One federally listed species, Howell's spectacular thelypody, and several other agency sensitive species could be affected by the B2H Project. Impacts on Howell's spectacular thelypody will likely be limited to short-term disturbance and low impacts due to the distance between the route and known occurrences. If new Howell's spectacular thelypody occurrences are identified during preconstruction surveys, impacts

could be greater. Impacts on other sensitive plant species will occur, and could be high or moderate depending on the species and extent of disturbance in occupied habitat. Impacts on sensitive plant species are anticipated to be largely avoided through application of design features of the B2H Project for environmental protection and selective mitigation measures. Preconstruction surveys for sensitive plant species would be conducted along any selected route. Areas determined to be occupied by sensitive plant species would be spanned or avoided. For federally listed species, additional measures to limit adverse impacts developed through the Section 7 consultation process will be applied and include multi-year surveys, species-specific avoidance buffers, and herbicide application restrictions.

## *WILDLIFE*

### **Wildlife Habitat**

Major wildlife habitat types crossed by the B2H Project include shrublands, grasslands, forests/woodlands, and RCAs. The B2H Project would result in moderate residual impacts on shrubland and forest/woodland habitats because they support a wide range of species and are slow to regenerate. Loss or adverse modification of native grassland habitats would result in moderate residual impacts because they are uncommon throughout the B2H Project area and, therefore, habitat for grassland species is limited. Although disturbance to RCAs is anticipated to be largely avoided through spanning and eliminating surface disturbance where feasible, the B2H Project would have moderate residual impacts on this wildlife habitat type.

### **Federally Proposed, Endangered, Threatened, and Candidate Species**

#### **Gray Wolf**

Portions of the B2H Project in Segment 1 are located in the ODFW East Wolf Management Zone where the gray wolf is listed as federally endangered. The West of Bombing Range Road – Southern Route Alternative crosses near an ODFW-designated estimated wolf-use area where gray wolves retain federally endangered status. Disturbance or displacement from habitat would result in moderate long-term impacts from B2H Project alternative routes.

#### **Migratory Birds, Including Raptors**

Effects on raptors and other migratory birds would be similar for all alternative routes. Impacts on raptors and other migratory birds would be reduced by conducting preconstruction surveys, limiting construction and maintenance activities during migratory bird nesting season, and implementing seasonal and spatial restrictions for sensitive periods and habitats. However, because removal or disturbance to nesting sites for raptors and other migratory birds could occur, all alternative routes could result in long-term moderate residual impacts.

### **Special Status Species**

#### **Greater Sage-Grouse**

Greater Sage-Grouse GMHA is crossed by all alternative routes in Segments 2 through 6. PHMA is crossed by all alternative routes in Segment 3, except for the Timber Canyon Alternative. The Applicant's



Proposed Action Alternative crosses substantially more PHMA than the other alternative routes in Segment 3. In Segment 4, all alternative routes cross PHMA, however, the Applicant's Proposed Action Alternative crosses the most amount of PHMA and the Tub Mountain South Alternative crosses the least amount of PHMA in Segment 4. Greater Sage-Grouse PHMA is not crossed by any of the alternative routes in Segments 5 or 6.

All alternative routes that cross GHMA would have long-term moderate residual impacts on Greater Sage-Grouse, and all alternative routes that cross PHMA would have long-term high residual impacts on Greater Sage-Grouse. In addition to the design features of the B2H Project for environmental protection and selective mitigation measures that would avoid or minimize impacts on Greater Sage-Grouse, the B2H Project would be required to achieve a net conservation gain for Greater Sage-Grouse through compensatory mitigation.

### **Columbia Spotted Frog**

All alternative routes in Segments 5 and 6 cross Columbia spotted frog suitable habitat. In addition, potentially occupied habitat would be crossed by the Applicant's Proposed Action Alternative (Variation S5-A2; refer to Area A in Map S-3e), the Malheur S Alternative, and the Malheur A Alternative in Segment 5. Residual impacts would be low for suitable habitat and moderate for potentially occupied habitat. Impacts on Columbia spotted frog would be avoided or minimized through design features of the B2H Project for environmental protection, such as conducting preconstruction surveys and avoiding or minimizing impacts on RCAs; and selective mitigation measures, such as implementing seasonal and spatial restrictions for sensitive periods and habitats and limiting new or improved access to areas previously inaccessible.

### **Washington Ground Squirrel**

Washington ground squirrel habitat is present in Segment 1 of the B2H Project and is the most densely occupied Washington ground squirrel habitat in the state of Oregon. All alternative routes analyzed in Segment 1 cross suitable habitat and would result in long-term moderate residual impacts on Washington ground squirrel. Occupied habitat is crossed by the Applicant's Proposed Action Alternative, the East of Bombing Range Road, the Applicant's Proposed Action – Southern Route, the West of Bombing Range Road – Southern Route, and the Longhorn Alternative, and would result in short-term, high residual impacts. The Interstate 84 Alternative and Interstate 84 – Southern Route Alternative have not been surveyed for Washington ground squirrel, and may or may not contain occupied habitat.

Additional short-term, high residual impacts would occur for alternative routes that cross the NWSTF Boardman from the surveys and excavation for unexploded ordnances that would be required prior to construction. Impacts would include disturbance on the NWSTF Boardman's Washington ground squirrel Resource Management Area.

## **Big Game**

The B2H Project would have short-term low residual impacts on big game. Seasonal restrictions in big game habitat during sensitive periods would result in only minor adverse effects on big game and would not limit the long-term sustainability of populations. In Segment 1, residual impacts on big game would be substantially greater for the West of Bombing Range Road – Southern Route compared to all other alternative routes as a result of crossing large areas of mule deer winter range. In Segment 3, residual impacts on big game would be substantially greater for the Timber Canyon Alternative compared to all other alternative routes as a result of crossing large areas of elk winter range. Differences in residual impacts on big game would be minimal among alternative routes for Segments 2, 4, 5, and 6.

## *FISH*

In Segments 1 and 2, the B2H Project would result in low and moderate residual impacts on fish resources. In Segments 3 through 6, the B2H Project would result in low residual impacts on fish resources. Low residual impacts are anticipated where alternative routes cross streams occupied by sensitive fish species (i.e., redband trout) and moderate residual impacts are predicted where alternative routes cross streams where occupied habitat, critical habitat, or essential fish habitat for ESA-listed fish (i.e. bull trout and bull trout critical habitat, Snake River spring/summer-run Chinook and Snake River spring/summer-run Chinook critical habitat, Middle Columbia River steelhead and Middle Columbia River steelhead critical habitat, Snake River steelhead and Snake River steelhead critical habitat, coho essential fish habitat, and chinook essential fish habitat) are present. Streams with ESA-listed fish habitat are crossed by alternative routes in Segments 1 and 2.

The differences in impacts on fish resources among the alternative routes are mainly related to the number of stream crossings and the extent of vegetation removal that would be required. Stream crossings would result in removal of tall vegetation that would decrease shading, potentially resulting in increased stream temperatures and sediment load. Design features of the B2H Project for environmental protection and selective mitigation measures that would avoid or minimize impacts on fish resources include spanning of riparian communities and water courses, using existing access roads when feasible, and selective removal of vegetation. Type 4 crossings (channel-spanning structures) would be used on all fish-bearing streams.

## *LAND USE*

In general, the short-term direct and indirect effects on land use would result in conflict of B2H Project construction activities with residential, commercial, public, and military land uses. These impacts would be temporary. Localized, long-term impacts from the B2H Project are anticipated; however, the implementation of the B2H Project would not preclude use of the area for residential, commercial, military or other land uses. However, some moderate and high impacts on existing land use are anticipated where the B2H Project would cross through or in proximity to areas of existing residential, commercial, or other development. The final alignment of the B2H Project will be micro-sited to the extent feasible, in coordination with landowners, to avoid or minimize impacts on existing land uses.

The Applicant's Proposed Action Alternative crosses Navy lands on the NWSTF Boardman. The Navy has expressed concern regarding the construction of transmission-line structures within special-use airspace in proximity of Bombing Range Road. The Federal Aviation Administration (FAA) requires utility line separation from runways and horizontal and conical zones for the safety of the planes and helicopters using the air space. Further, the B2H Project description includes structure-design modifications to meet the requirements of the Navy and the FAA in response to NWSTF Boardman's request to limit tower heights to 100 feet or less and to allow the Navy to meet their training mission. Cumulative impacts from the proposed B2H Project could include the creation of a utility corridor through existing land uses and NWSTF Boardman. Cumulative impacts also may occur in the vicinity of the utility project and on military training activities due to the increase in above-ground utility projects that may represent a hazard for aviators to avoid and could pose a compatibility issue with regards to airspace use.

### *AGRICULTURE*

Impacts on agriculture include both short-term and long-term effects, with long-term effects being significantly lower than the short-term effects associated with construction activities. The B2H Project would permanently occupy the lands on which project facilities are constructed, but some agricultural activities could continue within the right-of-way. The extent of existing agriculture affected by the B2H Project over the long term varies among alternative routes from 96 to 213 acres of dryland farmland; from 41 to 128 acres of irrigated farmland; and from 631 to 930 acres of land that is fallow, pasture, under crop production, or is a confined animal feeding operation. High impacts are associated with crossing tree farms and pivot irrigation, some of which could result in permanent impacts. A landing strip used for aerial spraying also could be affected.

Depending on the route selected, the B2H Project could adversely affect water rights and irrigation infrastructure used for agriculture. Under Oregon law water rights are tied to specific parcels of land and must be used at least once every 5 years or risk cancellation. For example, if water rights are granted to irrigate 160 acres of land, but irrigate only 80 acres of the land, the rights for the unused water for the remaining 80 acres are subject to cancellation. Since the B2H Project may require the removal of irrigated farmland from irrigation for more than 5 years, water rights could be subject to cancellation. Additionally, because some locations in the study corridor are critical groundwater areas (in Morrow and Umatilla Counties), it can be difficult, if not impossible, to reobtain water rights.

B2H Project facilities would permanently occupy soils used for farming, converting land from agricultural use to nonagricultural use. The extent of important farmland, high-value soils, and Conservation Reserve Program lands affected by the B2H Project over the long term varies among the alternative routes from 191 to 263 acres of prime farmland if irrigated; from 545 to 835 acres of farmland of statewide importance; from 223 to 331 acres of high-value soils; and from 146 to 374 acres of Conservation Reserve Program lands. High impacts would be associated with crossing Conservation Reserve Program lands, some of which are subject to existing contracts for conservation between landowners and the Farm Service Agency.

The majority of impacts on grazing operations would be short-term during construction and limited to areas of construction activity. However, some B2H Project facilities would result in long-term disturbance, removing some forage available to livestock. Long-term disturbance in grazing allotments is estimated to be between 870 and 1,314 acres depending on the alternative route selected.

Cumulative effects on existing agriculture could include the creation of a utility corridor through agricultural land. Because Oregon law promotes colocating transmission lines, future transmission lines could be colocated with the B2H Project, if constructed. While the B2H Project may be micro-sited around most agricultural operations, minimum offset requirements would make it more difficult for future transmission lines to avoid agricultural operations, particularly in the case of pivot irrigation.

### *RECREATION*

Short-term impacts on recreation from the B2H Project would be limited to those times when construction would occur in the immediate vicinity of specific recreation areas. Construction could result in intermittent access delays during construction.

Long-term, moderate impacts are anticipated in localized areas where the B2H Project would cross areas used for recreation activities including day use areas, hunting areas, semi-primitive non-motorized recreation opportunity spectrum areas, or recreation management areas. To minimize potential effects, new access roads in sensitive areas would be limited and tower structures would be placed to avoid directly affecting recreation facilities and use areas.

### *TRANSPORTATION*

The short-term effects of new road construction and road improvements for the B2H Project would be limited to the areas of construction activities. Long-term impacts from the B2H Project would be low. Coordination between the Applicant and U.S. Department of Transportation would be necessary to ensure appropriate siting of towers along roadways. Additional coordination will be necessary for compliance with Federal Highway Administration, Federal Railroad Administration, and FAA safety requirements, and acquisition of encroachment permits to construct the B2H Project.

### *LANDS WITH WILDERNESS CHARACTERISTICS*

Alternative route Variation S5-A2 (Map S-3e, Area A) is the only route that crosses an area (Double Mountain inventory unit) determined to possess wilderness characteristics (Map S-3e, Area A). The removal of this portion of the unit would not reduce the area below the 5,000-acre size requirement for being considered for wilderness designation.

For lands within the BLM Vale District that are within the planning area for the Southeastern Oregon Resource Management Plan (SEORMP), a court-approved settlement agreement also sets out certain requirements that BLM must follow until BLM completes an RMP amendment for the SEORMP (Settlement Agreement Between Oregon Natural Desert Association [ONDA], Committee for the High Desert, Western Water Project, and BLM (June 7, 2010)). The settlement agreement precludes the BLM from approving any surface-disturbing activity on lands that the BLM has identified as having

wilderness characteristics if the BLM finds that the B2H Project would either diminish the size of the inventory unit or cause the entire inventoried unit to no longer meet the criteria for wilderness character (ONDA v. Bureau of Land Management 2010).

The other alternative routes and variations analyzed in Segment 5 do not cross lands with wilderness characteristics. No lands with wilderness characteristics are present in the other five segments.

#### *POTENTIAL CONGRESSIONAL DESIGNATIONS*

Management direction in the SEORMP (BLM 2002) provides interim protection of outstanding remarkable values (ORV) of rivers found suitable for inclusion in the National Wild and Scenic River System until Congress acts. All alternative routes cross the Owyhee River Below the Dam suitable Wild and Scenic River (WSR) segment either within or adjacent to a utility corridor designated in the SEORMP. Owyhee River Below the Dam suitable WSR segment is an avoidance area for utility rights-of-way. Therefore, the B2H Project would be consistent with the management identified in the SEORMP if there is minimal conflict with the identified resource values and impacts can be mitigated. Short-term effects from implementation of the B2H Project would include increased noise and dust and increased activity along both sides of the river, which would temporarily disturb recreationists using the area and possibly affect recreational access to the river during the construction phase. No long-term effects on recreational opportunities (i.e., fishing and canoeing) would be expected.

If a route that crosses the Owyhee River Below the Dam suitable WSR segment were selected, the B2H Project would affect the view and experience of recreation users along the river and within the designated area. Construction of the B2H Project south of the BLM-designated utility corridor, near the mouth of the canyon, would dominate views in the enclosed landscape setting associated with the Owyhee River through the introduction of skylined transmission line structures from an inferior viewing position. An existing above-ground siphon has modified the existing setting near where the B2H Project crosses the river, but due to the scale of the proposed transmission-line structures, high impacts on the recreation experience and scenic values would occur at the eastern edge of the suitable river segment. As recreation viewers approach the crossing of the Owyhee River, views of skylined structures, construction access routes, and vegetation clearing would become visible and increasingly dominate the river's scenic setting.

Placement of any B2H Project components across the Owyhee River suitable segment would be micro-sited prior to construction in coordination with the BLM to minimize surface or visual disturbances from towers or other facilities and to minimize impacts on recreation and the visual environment. Other selective mitigation measures that would be applied include minimizing ground disturbance associated with construction and maximizing the span length between transmission line structures at the river crossing to reduce their dominance within Owyhee River's viewshed to the extent that is technically feasible. The B2H Project would not alter the river's free-flowing condition.

Alternative route Variation S5-B2 (Map S-3e, Area B) avoids the Owyhee River Below the Dam suitable WSR segment.

## VISUAL RESOURCES

### **Types of Potential Effects**

Visual resources would be affected by the construction, operation, and maintenance of the B2H Project. Construction of the B2H Project would potentially introduce short-term and long-term impacts on visual resources. Tower construction, line stringing, equipment operation, equipment/material transport, construction-related dust, and material stockpiling would attract attention resulting in short-term impacts on visual resources. Ground-disturbing activities related to construction and access road development/improvement could result in long-term adverse impacts on visual resources.

After construction, the presence of large transmission towers would introduce long-term impacts on visual resources. Maintenance activities such as transmission line replacement/re-stringing, potential transmission tower replacement, ongoing vegetative clearing within the right-of-way, and vehicular access could attract attention resulting in short-term impacts on visual resources.

### **Scenic Quality**

Long-term impacts on scenic quality would generally be highest where the B2H Project would cross undeveloped landscapes, landscapes that do not currently include large scale transmission lines, heavily wooded landscapes, and areas where existing scenic quality ratings are A or B.

The West of Bombing Range Road to Southern Route Alternative in Segment 1 would result in particularly high impacts to scenic quality because it would cross large expanses of undeveloped rolling sage steppe landscapes. Impacts to scenic quality in the eastern portion of Segment 1 and western portion of Segment 2 would also experience high impacts because of the clearing that would be required through forested areas within the Blue Mountains. A portion of land within Segment 2 with A scenic quality (VAU BA-018 – Grande Ronde River) would experience high impacts from the Applicant's Proposed Action, while the Mill Creek Alternative in this area would be colocated with an existing 230-kV transmission line and result in a lesser degree of impacts. Segment 5 also includes scenic quality A landscapes that would be impacted by the project. These impacts would be associated with several proposed alternatives that cross the Owyhee River Canyon (VAU MA-122). Scenic quality impacts in this area would be lower with the Malheur A Alternative because it would be generally colocated with a 500-kV transmission line and with Variation S5-B2 (Map S-3c, Area C) because it would avoid the Owyhee River Canyon.

Within Segment 3, the Timber Canyon Alternative would result in the highest amount of impacts to scenic quality because it would cross lands that are forested and/or generally undeveloped. The alternatives within Segment 3 that would result in the least amount of impact to scenic quality would be those that are mostly colocated with existing transmission lines and closest to developed agricultural lands to the west of the NHOTIC facility. The Flagstaff B – Durkee Alternative (same as Variation S3-C6) would also result in particularly high impacts to scenic quality because this alternative would cross lands that are primarily undeveloped and partially wooded.



## **Impacts on Viewers**

Impacts on viewers would generally be higher where views of the B2H Project components would be skylined, where sage steppe vegetation and topography would not obstruct views, and where the B2H Project would be visible within close proximity of viewing platforms. Because development density is generally higher along the I-84 corridor, impacts to views from residences would be highest along this corridor. Impacts on residences would be particularly high along the I-84 corridor in Segments 1, 2, and 3. Effects on residences in and around the community of Richland, Oregon also would be particularly high, in association with views of the B2H Project along the Timber Canyon Alternative.

Notable impacts on recreational views include impacts within forested lands in Segments 1 and 2, and along the Timber Canyon Alternative in Segment 3. Impacts on recreational views within these landscapes would be highest where new clearings, transmission towers, and access roads would be visible, but would otherwise be obstructed or backdropped by tall evergreen woodland vegetation from many viewing locations. Impacts in Segment 2 associated with Variation S2-C2 (Map S-3b, Area C) also would be particularly high from the Morgan Lake viewing platform, where the variation would be located in proximity and skylined within a mostly undeveloped landscape. Impacts associated with the NHOTIC facilities in Segment 3 would be highest in association with the Applicant's Proposed Action Alternative (same as Variation S3-B1; Map S-3c, Area B), from which some views of the project would be partially skylined and viewed within a sage steppe landscape that is mostly undeveloped. Views from the Burnt River Trailhead viewing platform (KOP 5-81) in Segment 3 would also experience high impacts. These impacts also would be associated with skylined views of the Flagstaff B – Durkee Alternative and Flagstaff B – Burnt River West Alternative from within an incised river canyon.

Recreational views in Segment 5 from within the Owyhee River Canyon are also important to note, in which several KOPs within the canyon would experience skylined views of the Malheur A, Malheur S, and Applicant's Proposed Action alternatives. Variation S5-B2 (Map S-3e, Area B) avoids crossing the canyon, and would result in lower impacts to recreational views. Although Segment 6 would include several key recreational viewing platforms, such as Jump Creek and Squaw Creek, views of the B2H Project from these viewpoints would generally include views of an existing 500-kV transmission line, resulting in low to moderate impacts.

## **Plan Conformance**

Areas of nonconformance associated with the B2H Project would occur on lands managed by both BLM and USFS. Nonconformance with BLM VRM Classes would occur in association with the Applicant's Proposed Action from KOP 5-60 in Segment 3, the Flagstaff B – Durkee Alternative and Flagstaff B – Burnt River West Alternative from KOP 5-81 in Segment 3. The Tub Mountain South Alternative from KOP 8-3 in Segment 4, the Applicant's Proposed Action Alternative and Variation S5-B2 (Map S-3e, Area B) from KOPs 8-52 and 13-1 in Segment 5, and the Malheur A and Malheur S alternatives from KOPs 8-84, 8-95, and 8-96 in Segment 5. Nonconformance with USFS VQOs would be associated with all alternatives and variations within Segment 1, all alternatives and Variations S2-A1 and S2-A2 (Map S-3e, Area A) within Segment 2, and the Timber Canyon Alternative in Segment 3.

## **Cumulative Effects**

Cumulative impacts would be greatest within the flat to rolling dry farmlands in Segment 1. The B2H Project, in combination with proposed wind facilities and the B2H Project would result in relatively high cumulative impacts.

### *CULTURAL RESOURCES AND NATIVE AMERICAN CONCERNS*

Construction of the B2H Project and its ancillary facilities could directly affect existing cultural resources. Construction or other ground-disturbing activities could directly or indirectly affect previously unidentified cultural resources (primarily buried resources). Such impacts are likely to be adverse.

Increased use of existing and new access roads may encourage unauthorized site access, illicit artifact collection, and vandalism. Vibration from construction equipment and construction activities (such as blasting or drilling) may affect cultural resources, especially historic resources with standing architecture or pre-contact rockshelters. Impacts on the setting and feeling of cultural resources may be introduced through the addition of the B2H Project's structural elements to the landscape. Construction of transmission-line structures may introduce indirect (visual) effects on existing cultural resources, especially historic trails and Native American spiritual sites.

Once the B2H Project has been constructed, the presence of large transmission-line structures may introduce long-term impacts on the setting of certain cultural resources, particularly those sensitive to changes in the visual field, including intact segments of NHTs, cultural landscapes, and sites or areas of Native American concern (e.g., historic properties of religious and cultural significance to Indian tribes, natural features, rock image sites, rock features, trails, battle sites, human burial sites, and sites associated with hunting, fishing, gathering, or other rights reserved by treaty).

Cultural resources that are located in the study corridor may be directly affected by use and improvement of access roads, and construction of pads for new transmission-line structures and facilities.

Indirect effects could consist of increased off-road traffic, and therefore easier access to cultural resources, which could result in vandalism or inadvertent adverse effects. Auditory impacts may consist of transmission line "buzzing" or "humming" that could detract from the remote sense of feeling, contributing to the character of certain cultural resources such as NHTs, sites/areas of Native American concern (including historic properties of religious and cultural significance to Indian tribes), and cultural landscapes.

Periodic access to the transmission line's rights-of-way is required to maintain its operating function. Thus, access roads would be kept open, at least at a two-track level, which increases the potential for vandalism and illicit artifact collection. Access roads could be gated (i.e., closed to the general public) as part of cultural mitigation. Continued use of access roads for maintenance may increase erosion, which could affect cultural resources located along the margins of roads. Other maintenance activities, such as vegetation removal, have the potential to produce ground disturbance, which may, in turn, affect both previously identified and unidentified cultural resources.

The presence and/or introduction of electric and magnetic fields (EMF) in the B2H Project area have been reported, through government-to-government consultation, to be of concern to Native American sovereign tribal governments. The tribes have expressed that areas in which EMF are present would be rendered unsuitable for cultural and religious practices. Potential impacts of EMF would be discussed in government-to-government consultation between the BLM and the appropriate Native American tribal governments, on a case-by-case basis.

#### *NATIONAL HISTORIC TRAILS AND TRAILS UNDER STUDY FOR CONGRESSIONAL DESIGNATION*

Construction potentially would introduce temporary impacts on visual resources, recreational experiences, and historic and cultural settings, as well as permanent impacts on historic properties. Construction would attract attention within the analysis area, resulting in short-term impacts on visual resources and historic and cultural settings. Ground-disturbing activities related to construction and access road development/improvement could result in long-term impacts on unidentified NHT-associated historic and cultural resources, particularly those that are buried.

After construction, the presence of large transmission towers potentially would introduce permanent impacts on visual resources, recreational experiences, and historic and cultural settings. Maintenance activities could attract attention within the analysis area and could detract from the sense of feeling contributing to the historic character of NHT resources.

#### **Oregon National Historic Trail**

All B2H Project alternative routes would affect the Oregon NHT with alternative routes in Segment 5 and 6 only generating low impacts on the NHT. All alternative routes in Segment 1 would moderately affect views from the Blue Mountain Crossing Interpretive Park High Potential Historic Site except Variation S1-B2 (Map S-3a; Area B) would highly affect these views by being located in proximity to the site where geometric right-of-way vegetation clearing would be visible. Additionally, all alternatives adjacent to Bombing Range Road would highly impact the setting adjacent to the Boardman High Potential Route Segment where the Oregon NHT is crossed. In Segment 2, the Applicant's Proposed Action Alternative and route variations would have a similar level of impacts on Oregon NHT resources whereas the Glass Hill Alternative would generate lower impacts by avoiding the contributing trail segments west of La Grande, and the Mill Creek Alternative would highly affect the settings adjacent to these trail segments by paralleling the trail for approximately 5 miles. In proximity to the NHOTIC, all alternatives in Segment 3 except the Timber Canyon Alternative, would generate an area of high impacts on the NHOTIC and adjacent trail resources. However, since the Applicant's Proposed Action Alternative would not be located adjacent to the existing 230-kV transmission line, this alternative would generate more intense impacts on the less modified setting east of the NHOTIC. The Applicant's Proposed Action Alternative and Willow Creek Alternative, in Segment 4, would highly affect views from the auto-tour route but generally would avoid impacts on the Farewell Bend High Potential Historic Site, Birch Creek Interpretive Site, Alkali Flats High Potential Route Segment, and adjacent contributing trail segments as these B2H Project alternative routes turn to the west away from the Oregon NHT. The Tub Mountain South Alternative would highly

affect more of the auto-tour route as well as highly affecting views from the Birch Creek Interpretive Site, Alkali Flats High Potential Route Segment, and contributing trail segments. Due to these areas of high impacts, compensatory mitigation would be required to offset these effects.

### **Lewis and Clark National Historic Trail**

All alternative routes would moderately affect and cross the Lewis and Clark National Historic Trail auto-tour route, near the intersection of U.S. Highway 730 and Interstate 84, in an area south of the congressional trail alignment, in Segment 1. The B2H Project, however, is located more than 2 miles away from the congressional trail alignment along the Columbia River, and since the B2H Project is located adjacent to existing modifications, this component of the NHT would be affected minimally by the B2H Project.

### **Goodale's Cutoff Study Trail**

Both the Applicant's Proposed Action Alternative and Timber Canyon Alternative in Segment 3 would highly affect the study trail, which would require compensatory mitigation to reduce effects on the trail's potential designation. The Applicant's Proposed Action Alternative would cross the study trail east of the NHOTIC and the Timber Canyon Alternative would cross the study trail east of the community of Richland, both occurring in areas with limited cultural modifications. Views of the Flagstaff A Alternative routes would be screened by topography from the study trail. The Flagstaff B alternatives would moderately affect the study trail for approximately 0.5 mile where visible west of the NHOTIC in Baker Valley. Through the application of selective mitigation measures, including minimizing cut and fill slopes associated with construction access and work areas as well as limiting the construction of new or improved access roads, the effects on the potential designation of the trail would be minimized to the extent practicable.

### **Meek Cutoff Study Trail**

In Segment 5, all alternative routes share a common alignment in proximity to the Meek Cutoff Study Trail. Due to the limited existing modifications in proximity to the B2H Project crossing of the study trail, the B2H Project would highly affect the study trail. After the application of selective mitigation measures including minimizing cut and fill slopes associated with construction access and work areas, limiting the construction of new or improved access roads, and maximizing the transmission line span across the trail, these high impacts on the Meek Cutoff Study Trail would remain. Compensatory mitigation would be required to reduce effects on the trails potential designation as outlined in Appendix C.

### **Upper Columbia River Route Study Trail**

All alternative routes would minimally affect the study trail in Segment 1 since the B2H Project is located more than 2 miles away and in proximity to existing modifications. The addition of the B2H Project would not compromise the potential designation of the trail.

### **Olds Ferry Road Study Trail**

The Applicant's Proposed Action Alternative and Willow Creek Alternative would minimally affect the Olds Ferry Road Study Trail. The Tub Mountain South Alternative would moderately affect views to the west

from Farewell Bend; however, through the application of selective mitigation measures, including minimizing cut and fill slopes associated with construction access and work areas, limiting the construction of new or improved access roads, and using overland construction techniques where possible, the effects on the potential designation of the trail would be minimized to the extent practicable.

### **Umatilla River Route and Columbia River to The Dalles Study Trail**

The Applicant's Proposed Action Alternative, East of Bombing Range Road Alternative, Applicant's Proposed Action – Southern Route Alternative, West of Bombing Range Road – Southern Route Alternative, and Longhorn Alternative in Segment 1 would minimally affect the study trail due to the B2H Project being located more than 2 miles away and in proximity to existing modifications. The Interstate 84 and Interstate 84 – Southern Route Alternative would moderately affect the study trail north of the community of Echo; however, through the application of selective mitigation measures, including the use of overland construction techniques and maximizing the transmission line span across the trail, the effects on the trail, and potential designation of the trail, would be minimized to the extent practicable.

### *AIR QUALITY AND CLIMATE CHANGE*

Temporary effects on air quality would result from fugitive dust and emissions from vehicles and equipment during construction. Construction activities that would generate emissions include land clearing, ground excavation, and cut and fill operations. The intermittent and short-term emissions generated by these activities would include dust from surface disturbance and combustion emissions from the construction equipment. Emissions associated with construction equipment include PM<sub>10</sub>, PM<sub>2.5</sub> (particulate matter less than 2.5 microns), nitrogen oxides, carbon monoxide, volatile organic compounds, sulfur oxides, and small amounts of air toxic pollutants. These emissions could result in low, short-term impacts on air quality in the immediate vicinity of B2H Project construction.

### *SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE*

Although construction and operation of the B2H Project could affect the region's population size, housing availability, and economic conditions, these activities are not anticipated to have any residual effects since the work force associated with construction is relatively small and transitory. Also, the Applicant's existing staff would be responsible for the operations and maintenance of the new transmission line and associated facilities. The additional demand on housing and municipal and county services stimulated by the influx of construction workers is not anticipated to exceed regional supply and would subside as the two spreads are constructed. Thus, activities associated with the construction, operations, and maintenance the B2H Project would not have any long-term residual effects on regional socioeconomic conditions.

Residual socioeconomic effects would result from surface disturbances persisting after mitigation measures are applied. Residual effects would continue to interfere with agricultural-crop and livestock production and eliminate timber potential in the B2H Project right-of-way for the life of the B2H Project. Lower crop yields, animal carrying capacities of confined animal feeding operations, and reduced forage resulting from these disturbances would negatively affect the region's agricultural sector.

Reduced agricultural production within the B2H Project corridor would create a ripple effect as agricultural producers purchase fewer inputs to production and cut back on their household spending. Residual impacts of the B2H Project on regional employment and labor income would not be significant and most likely would be concentrated in business centers whose retailers serve a greater proportion of agricultural producers and their households.

#### *PUBLIC HEALTH AND SAFETY*

Energizing the transmission lines creates EMF that would vary based on the time of year, line loading, and environmental factors. The modeled EMF are within the established standards identified by International Commission on Non-Ionizing Radiation Protection for non-ionizing radiation exposure (ICNIRP 1998, 2010). As a result, impacts on public health and safety from the B2H Project would be low.

#### **PLAN AMENDMENTS**

Actions approved or authorized by the federal land-managing agencies must conform to current LUPs for the lands they administer (43 CFR 1610.5-3 [BLM] and 36 CFR 219.10(e) of the planning regulations in effect before November 9, 2000 [USFS]). A land-use plan amendment may be necessary in order to consider a proposed action that may result in a change in the scope of resource uses or a change in the decisions of the approved land-use plan.

Some aspects of the B2H Project do not conform to current management direction in one or more of the relevant LUPs. For some specific portions of the B2H Project, where avoidance was not possible, or where application of all feasible mitigation measures was determined through B2H Project-specific analysis to be insufficient to bring the B2H Project into conformance with the administering federal agency's land-use plan, a land-use plan amendment would be required to amend decisions in the LUPs to accommodate the B2H Project. Land-use plan amendments would be required to allow approval of the B2H Project.

Alternative routes cross BLM-administered lands managed under the Baker RMP in Oregon (BLM 1989), the SEORMP in Oregon (BLM 2002), and the Owyhee RMP in Idaho (BLM 1999) and National Forest System lands managed under the Wallowa-Whitman National Forest Land and Resource Management Plan (USFS 1991). Table S-2 lists the RMPs that could require an amendment, the identified nonconformance issue, and the applicable alternative routes (by B2H Project segment) relative to the proposed plan amendments.

<b>Table S-2. Proposed Plan Amendments of Federal Land-use Plans by Alternative Route</b>		
<b>Nonconformance Issue(s)</b>	<b>Proposed Plan Amendment</b>	<b>Alternative Routes Relative to Plan Amendments</b>
<b>Segment 1—Morrow-Umatilla</b>		
<b>Wallowa-Whitman National Forest Land and Resource Management Plan (LRMP)</b>		
B2H Project not consistent with Visual Quality Objectives (VQO)	VQO polygons intersected by the right-of-way would be reassigned to Maximum Modification for purposes of constructing and maintaining the B2H Project.	Applicant's Proposed Action (West of Bombing Range Road) (Variations S1-B1 and S1-B2; Map S-3a, Area A)
B2H Project not consistent with the standards for the Eastside Screens	LRMP direction for Eastside Screens would be amended to allow B2H Project-related cutting or destruction of timber	Applicant's Proposed Action (West of Bombing Range Road) (Variations S1-B1 and S1-B2; Map S-3a, Area A)
B2H Project not consistent with the standards in Riparian Habitat Conservation Areas (RHCAs) per PACFISH/INFISH direction <sup>1</sup>	LRMP direction for Eastside Screens would be amended to allow B2H Project-related felling of trees within RHCAs	Applicant's Proposed Action (West of Bombing Range Road) (Variations S1-B1 and S1-B2; Map S-3a, Area A)
<b>Segment 2—Blue Mountains</b>		
<b>Wallowa-Whitman National Forest Land and Resource Management Plan</b>		
B2H Project not consistent with Visual Quality Objectives (VQO)	VQO polygons intersected by the right-of-way would be reassigned to Maximum Modification for purposes of constructing and maintaining the B2H Project.	Applicant's Proposed Action (Variations S2-A1 and S2-A2 Map S-3b, Area B); Glass Hill; Mill Creek
B2H Project not consistent with the standards for the Eastside Screens	LRMP direction for Eastside Screens would be amended to allow B2H Project-related cutting or destruction of timber	Applicant's Proposed Action (Variations S2-A1 and S2-A2 Map S-3b, Area B); Glass Hill; Mill Creek
B2H Project not consistent with the standards in Riparian Habitat Conservation Areas (RHCAs) per PACFISH/INFISH direction <sup>1</sup>	LRMP direction for Eastside Screens would be amended to allow B2H Project-related felling of trees within RHCAs	Applicant's Proposed Action (Variations S2-A1 and S2-A2 Map S-3b, Area B); Glass Hill; Mill Creek
<b>Segment 3—Baker Valley</b>		
<b>BLM Baker Resource Management Plan (RMP)</b>		
Nonconformance (due to visual contrast) with Visual Resource Management (VRM) Class III objectives established in the RMP for the area near the National Historic Oregon Trail Interpretive Center (NHOTIC) near Baker City, Oregon	The portion of the 250-foot-wide right-of-way for the B2H Project within VRM Class III lands in the vicinity of the NHOTIC would be amended to VRM Class IV for portions of the B2H Project that would still exceed acceptable levels of change within the VRM Class III areas after application of all feasible measures to reduce impacts on visual resources.	Applicant's Proposed Action (Variation S3-B1; Map S-3c, Area B)
Nonconformance with the VRM Class II lands crossed by the 250-foot-wide right-of-way	The portion of the 250-foot-wide right-of-way for the Boardman to Hemingway Transmission Project within VRM Class II lands in Burnt River Canyon would be amended to VRM Class IV for only those portions of the B2H Project that would still exceed acceptable levels of change within the VRM Class II areas after application of all feasible measures to reduce impacts on visual resources.	Flagstaff B – Burnt River West (Variation S3-C5; Map S-3c, Area C); Flagstaff B – Durkee (Variation S3-C6)



<b>Table S-2. Proposed Plan Amendments of Federal Land-use Plans by Alternative Route</b>		
<b>Nonconformance Issue(s)</b>	<b>Proposed Plan Amendment</b>	<b>Alternative Routes Relative to Plan Amendments</b>
<b>Wallowa-Whitman National Forest Land and Resource Management Plan</b>		
Management Area Allocation	The management of lands within the B2H Project right-of-way and disturbance required to provide access (permanent and temporary) would be amended to follow LRMP direction for MA-17 to facilitate the B2H Project	Timber Canyon
B2H Project not consistent with Visual Quality Objectives (VQO)	VQO polygons intersected by the right-of-way would be reassigned to Maximum Modification for purposes of constructing and maintaining the B2H Project.	Timber Canyon
B2H Project not consistent with the standards for the Eastside Screens	LRMP direction for Eastside Screens would be amended to allow B2H Project-related cutting or destruction of timber	Timber Canyon
B2H Project not consistent with the standards in Riparian Habitat Conservation Areas (RHCAs) per PACFISH/INFISH direction <sup>1</sup>	LRMP direction for Eastside Screens would be amended to allow B2H Project-related felling of trees within RHCAs	Timber Canyon
<b>Segment 4—Brogan</b>		
<b>Southeastern Oregon Resource Management Plan</b>		
Nonconformance with VRM Class III objectives in the vicinity of the Oregon Trail Area of Critical Environmental Concern (ACEC) – Birch Creek portion	The portion of the 250-foot-wide right-of-way for the B2H Project within VRM Class III lands in the vicinity of the Oregon National Historic Oregon Trail ACEC would be amended to VRM Class IV for only those portions of the B2H Project that would still exceed acceptable levels of change within the VRM Class III areas after application of all feasible measures to reduce impacts on visual resources.	Tub Mountain South
<b>Segment 5—Malheur</b>		
<b>Southeastern Oregon Resource Management Plan</b>		
Nonconformance with VRM Class II and III objectives established for the suitable Owyhee River Below the Dam Wild and Scenic River (WSR) Segment.	The portion of the 250-foot-wide right-of-way for the B2H Project within VRM Class II and III lands in the Owyhee River Below the Dam ACEC would be amended to VRM Class IV for only those portions of the B2H Project that would still exceed acceptable levels of change within the VRM Class II and III areas after application of all feasible measures to reduce impacts on visual resources	Applicant's Proposed Action (Variation S5-B1 and Variation S5-B2; Map S-3e, Area B)

Nonconformance Issue(s)	Proposed Plan Amendment	Alternative Routes Relative to Plan Amendments
Nonconformance with Class II objectives established for the Owyhee River Below the Dam ACEC and the suitable Owyhee River Below the Dam WSR Segment	The portion of the 250-foot-wide right-of-way for the B2H Project within VRM Class II lands in the Owyhee River Below the Dam ACEC would be amended to VRM Class IV for only those portions of the B2H Project that would still exceed acceptable levels of change within the VRM Class II areas after application of all feasible measures to reduce impacts on visual resources.	Malheur A; Malheur S
<p>Table Note: <sup>1</sup>In 1995, <i>Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California</i> amended 15 forest plans in Region 6, including the LRMP for the Wallowa-Whitman National Forest. This is referred to as Regional Forester’s Amendment #3, and the direction is commonly known as “PACFISH.” Another Decision Notice signed the same year, <i>Inland Native Fish Strategy - Interim Strategies for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada</i>, amended 22 forest plans, including the Wallowa-Whitman National Forest LRMP. Regional Forester’s Amendment #4 (RF-4), and the direction is commonly referred to as “INFISH”.</p>		

**SUMMARY COMPARISON OF ALTERNATIVE ROUTES**

As stated previously, Chapter 3 presents descriptions of the potentially affected environment and environmental consequences that could occur from B2H Project activities along any of the alternative routes. The more detailed information presented in Chapter 2 is summarized in Table 2-19 through 2-36 at the end of Chapter 2. These tables characterize the key issues and associated impacts for each resource along each alternative route and route variations by segment. This information serves as a basis for comparing the alternative routes and route variations. The process of comparing the alternative routes and route variations is explained in Section 2.5.

**ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

In this EIS, the alternative route that results in the least impact on the natural, human, and cultural environment and best protects, preserves, and enhances historic, cultural, and natural resources is the environmentally preferable action alternative.

Comments on the Draft EIS recommended local route variations; that is, variations of alternative routes addressed in the Draft EIS. In some cases, these route variations were developed by counties working with local stakeholders. Because of the additional variants, all alternative routes were analyzed and compared for the Final EIS. As a result, the environmentally action alternative route that emerged from the analysis for the Final EIS is the route exhibiting the least effects overall on the natural, human, and cultural environment. Key considerations to compare the relative impacts among alternative routes include the following:

- Vegetation: Native Grassland, Shrubland, Forest, Riparian (RCA) vegetation communities
- Wildlife: Washington ground squirrel, Greater Sage-Grouse, big game winter range
- Fisheries: ESA-listed fish species, Essential Fish Habitat

- Land uses: relevant and important values or characteristics of certain land uses established for conservation or recreation (specially designated areas, Potential Congressional Designations, managed recreation areas), lands with wilderness characteristics, paralleling existing linear facilities, consideration of existing development (e.g., commercial, residential)
- Agriculture: existing agriculture (i.e., irrigated agriculture and crop production), soils important to farming as identified in federal and state law (i.e., high-value soils and important farmland), Conservation Reserve Program lands (agricultural lands in the B2H Project area are important because of the high-quality soils associated with the Columbia River Basin, proximity to processing facilities, and flat topography)
- National Historic Trails/Study trails: direct, indirect effects on trails
- Visual resources: scenic quality/landscape character, visibility from key observation points (residential, recreation, historic and scenic travel routes)
- Cultural resources: NRHP-eligible and listed properties, sites and/or areas of concern to Native Americans, cultural landscapes, and other areas of cultural significance

Although vegetation, wildlife, and fisheries are key considerations in the comparison of alternative routes, after comparing the alternative routes, these key considerations did not emerge as primary discriminators to identifying the environmentally preferable action alternative. While effects on vegetation communities would occur, design features of the B2H Project for environmental protection are anticipated to limit these effects through reducing the extent of disturbance, preventing the spread and establishment of invasive plants, and reclaiming disturbed areas with desirable native vegetation. Only one ESA-listed plant species, Howell's spectacular thelypody, occurs in the B2H Project area and all known occurrence of the species are located more than 1 mile from any alternative route. Other sensitive plants species (approximately 22; refer to Appendix D) are known to occur within 1 mile from alternative routes, but potential impacts resulting from any alternative route would be avoided or minimized to the greatest extent possible and not likely to contribute to the need to list the species under the ESA. Big game and migratory birds and raptors were not considered primary contributors to identifying the environmentally preferable action alternative because, while short- and long-term habitat loss associated with these species would occur, none of the alternative routes are anticipated to negatively affect big game or migratory birds and raptors appreciably due to the small amount of habitat affected compared to the large home ranges of these species. Disturbance of big game and migratory birds and raptors during sensitive periods would be minimized through the implementation of seasonal restrictions. Alternative routes in Segments 1 and 2 cross streams that support ESA-listed fish (steelhead, Chinook salmon, and bull trout), and associated protected fish habitat. In addition, alternative routes in all segments cross streams that support redband trout. Fish resources were not considered a primary contributor to identifying the environmentally preferable action alternative because streams that support ESA-listed fish and associated protected fish habitats would be completely spanned and no new access road crossings, or modifications of existing crossings below the ordinary high water mark, would occur in waterways that support ESA-listed fish and associated protected fish habitats.

The combinations of alternative routes and route variations that compose the environmentally preferable action alternative is summarized in Table S-3, which is a list of links that comprise the

environmentally preferable action alternative route, and shown on Table S-4 (also refer to Maps S-3a through S-3f).

<b>Table S-3. Summary of Environmentally Preferable Action Alternative Route</b>			
<b>Segment Number</b>	<b>Alternative Route</b>	<b>Link(s)</b>	<b>Length (miles)<sup>1</sup></b>
Segment 1	Interstate 84 – Southern Route Alternative with Variation S1-A2	1-5, 1-9, 1-19, 1-23, 1-37, 1-39, 1-49, 1-50, 1-81, 1-83, 1-66, 1-65, 1-71, 1-77	93.7
Segment 2	Glass Hill Alternative with Variations S2-A2, S2-D2, and S2-F2	2-3, 2-7, 2-15, 2-20, 2-30, 2-40, 2-46, 2-50, 2-52, 2-60, 2-70, 2-80, 2-90	33.7
Segment 3	Flagstaff B – Burnt River West Alternative with Variations S3-A2 and S3-B4	3-10, 3-12, 3-14, 3-20, 3-24, 3-31, 3-32, 3-36, 3-38, 3-39, 3-43, 3-44, 3-48, 3-52, 3-54, 3-56, 3-60, 3-62, 3-66, 3-71, 3-73, 3-94	55.1
Segment 4	Tub Mountain South Alternative with Variation S4-A2	4-1, 4-5, 4-15, 4-17, 4-20, 4-30, 4-75	40.5
Segment 5	Applicant’s Proposed Action Alternative with Variation S5-B2	5-1, 5-5, 5-10, 5-15, 5-40, 5-45, 5-70, 5-75	40.6
Segment 6	Applicant’s Proposed Action Alternative with Variations S6-A2 and S6-B2	6-1, 6-5, 6-15, 6-30, 6-35	27.3
<b>Total</b>			<b>290.7</b>

*Table Note:* <sup>1</sup>Mileage calculations are approximate as of March 4, 2016.

**APPLICANT’S PROPOSED ACTION ALTERNATIVE**

The Applicant’s Proposed Action Alternative was selected by the Applicant based on a combination of several factors, including system planning and reliability, engineering feasibility and constructability, costs, safety, and landowner concerns. Through system planning and engineering studies, the Applicant considered engineering feasibility and constructability in respect to terrain and geologic hazards, which also is related to costs that would be passed onto the customer base.

Also, through the Applicant-sponsored Community Advisory Process and other discussions with landowners, the Applicant developed a route that would be acceptable to the Applicant and the communities in eastern Oregon and southwestern Idaho. The Applicant avoided more densely populated areas when possible. Another criterion for siting the alternative routes was to parallel existing linear facilities to the extent practicable; however, the Applicant also had to consider the route in relation to other high-voltage transmission lines and the effect it might have on reliability. By choosing a route that has fewer high-voltage transmission lines or lines that do not share common interconnection points on the power grid improves overall reliability.

The Applicant’s Proposed Action Alternative is summarized in Table S-4 and shown on Maps S-5a and S-5b (also refer to Maps S-3a through S-3f).

<b>Table S-4. Applicant’s Proposed Action Alternative</b>		
<b>Segment Number</b>	<b>Link(s)</b>	<b>Length (miles)<sup>1</sup></b>
Segment 1	1-1, 1-3, 1-7,1-27, 1-35, 1-43,1-45, 1-51,1-53, 1-59, 1-60, 1-61, 1-50, 1-63, 1-65, 1-71, 1-77	91.9
Segment 2	2-1, 2-5, 2-15, 2-20, 2-30, 2-35, 2-45, 2-47, 2-50, 2-52, 2-60, 2-75, 2-85, 2-95	33.8
Segment 3	3-4, 3-22, 3-26, 3-28, 3-52, 3-54, 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92	55.2
Segment 4	4-1, 4-10, 4-11, 4-13, 4-25, 4-45, 4-50, 4-65, 4-70	40.3
Segment 5	5-1, 5-5, 5-10, 5-15, 5-40, 5-50, 5-55, 5-65, 5-70, 5-75	40.4
Segment 6	6-1, 6-10, 6-20, 6-25, 6-35	28.0
Total		289.6

*Table Note:* <sup>1</sup>Mileage calculations are approximate as of March 4, 2016.

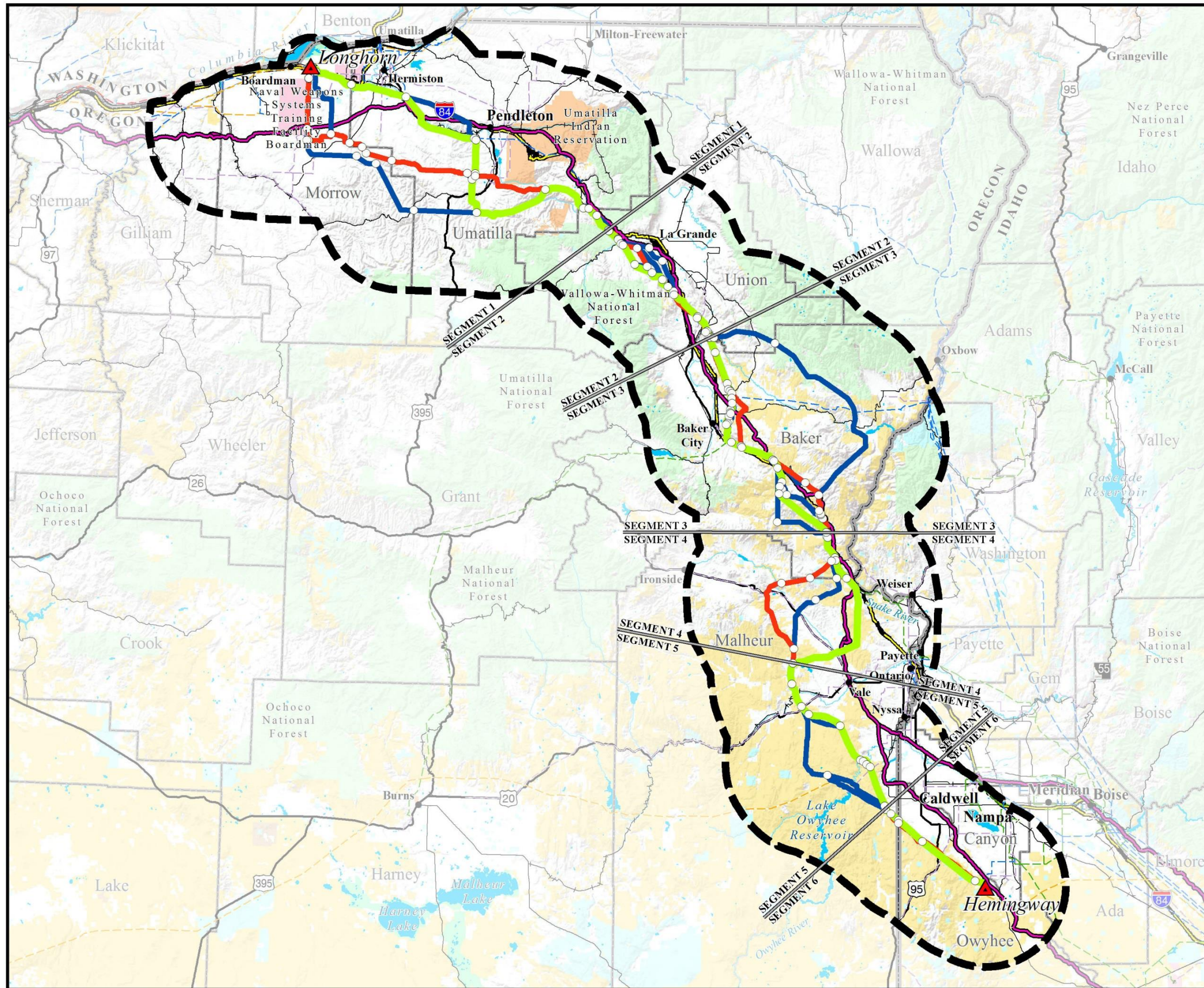
**AGENCY PREFERRED ALTERNATIVE**

Per 40 CFR 1502.14(e), the BLM, with input from cooperating agencies, identified the Agency Preferred Alternative. The Agency Preferred Alternative on federal lands is the alternative route the BLM, in coordination with the cooperating agencies, believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors. USDI regulations at 43 CFR 46.20(d) allow the responsible official to render a decision on a proposed action as long as it is within the range of alternatives discussed in the relevant environmental document. The decision of the responsible official(s) may combine alternatives discussed, in the relevant environmental document, if the effects of such combined elements of alternatives are reasonably apparent from the analysis.

The Agency Preferred Alternative route was identified by the BLM in coordination with the USFS and other federal, state, and local agencies using the same criteria used for the comparison of alternative deriving the environmentally preferable action alternative route, but adding two additional considerations. First, if multiple alternatives meet the preceding criteria, the Agency Preferred Alternative would consider minimizing technical constraints; construction, operation, and maintenance costs; and/or schedule. Second, because of the high percentage of the land that would be crossed is privately owned (approximately 70 percent private or state, 30 percent federally administered), the BLM worked extensively with the affected counties to identify a route that would be responsive to their concerns.

The Agency Preferred Alternative is summarized in Table S-5 and shown on Maps S-5a and S-5b (also refer to Maps S-3a through S-3f).





Map S-4

### Environmentally Preferable Action Alternative Route

#### BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

**Project Features**

Project Area Boundary	Environmentally Preferable Action Alternative Route
Substation (Project Terminal)	Link Node
Applicant's Proposed Action Alternative	Segment Line
Alternative Route	

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	Other Federal
National Park Service	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
500-kV Transmission Line	U.S. Highway
345-kV Transmission Line	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
 Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013; Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007, Logan Simpson Design 2011, Ventyx 2012; Pipelines, ESRI 2012; Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**

- The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
- Substation symbols do not necessarily represent precise locations.
- The B2H Project area boundary is defined by buffering the alternative route centerlines.
- Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).
- Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.
- No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

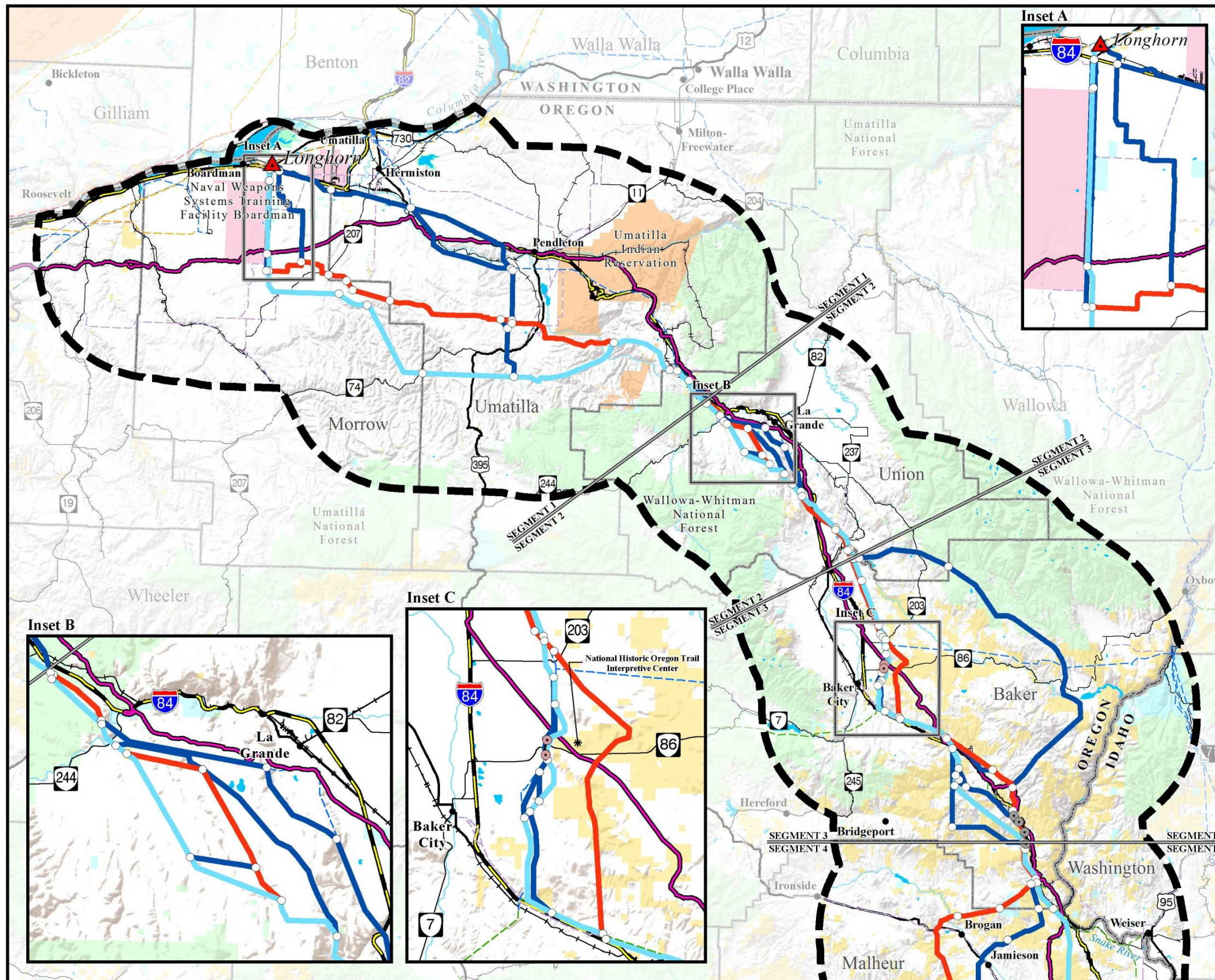
Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

0 5 10 20 30 40  
 Miles  
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Map S-5a  
**Applicant's Proposed Action Alternative and Agency Preferred Alternative Routes (Northern Area)**

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

**Project Features**

Project Area Boundary	Link Node
Substation (Project Terminal)	Segment Line
Applicant's Proposed Action Alternative	Flagstaff 230-kV Rebuild (Inset C)
Alternative Route	Double-circuit 138/69-kV Rebuild (Inset D)
Agency Preferred Alternative Route	

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	Other Federal
National Park Service	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
500-kV Transmission Line	U.S. Highway
345-kV Transmission Line	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013; Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007, Logan Simpson Design 2011, Ventyx 2012; Pipelines, ESRI 2012; Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013; Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013; Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**

- The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
- Substation symbols do not necessarily represent precise locations.
- The B2H Project area boundary is defined by buffering the alternative route centerlines.
- Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).
- Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.
- No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

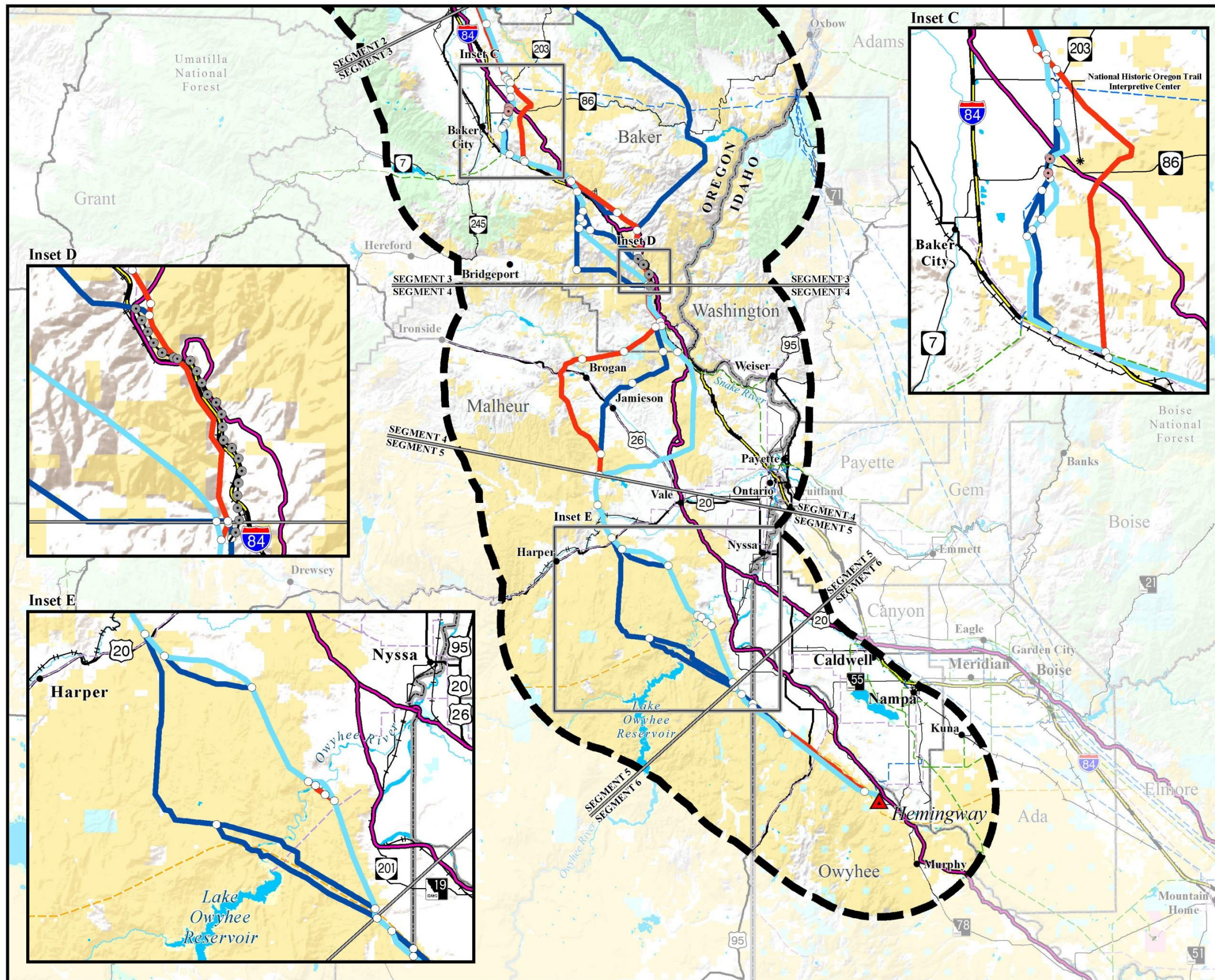
Alternative routes last revised: February 18, 2016  
Final EIS: November 2016

0 5 10 15 30  
Miles  
1:950,400 or 1 inch = 15 miles



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### Map S-5b Applicant's Proposed Action Alternative and Agency Preferred Alternative Routes (Southern Area)

#### BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

**Project Features**

Project Area Boundary	Link Node
Substation (Project Terminal)	Segment Line
Applicant's Proposed Action Alternative	Flagstaff 230-kV Rebuild (Inset C)
Alternative Route	Double-circuit 138/69-kV Rebuild (Inset D)
Agency Preferred Alternative Route	

**Land Ownership**

Bureau of Land Management	U.S. Fish and Wildlife Service
Bureau of Reclamation	U.S. Forest Service
Indian Reservation	Other Federal
National Park Service	State Land
U.S. Department of Defense	Private Land

**General Reference**

City or Town	Interstate Highway
500-kV Transmission Line	U.S. Highway
345-kV Transmission Line	State Highway
230-kV Transmission Line	Lake or Reservoir
138-kV Transmission Line	State Boundary
69- to 115-kV Transmission Line	County Boundary
Railroad	Oregon National Historic Trail Congressionally Designated Alignment

**SOURCES:**  
 Land Status, BLM 2014, 2015; Cities and Towns, ESRI 2013;  
 Transmission Lines, Bonneville Power Administration 2009, Idaho Power Company 2007,  
 Logan Simpson Design 2011, Ventyx 2012, Pipelines, ESRI 2012;  
 Railroads, Idaho DOT 2006, Oregon DOT 2014; Highways, ESRI 2013;  
 Waterbodies, ESRI 2013; State and County Boundaries, ESRI 2013;  
 Oregon National Historic Trail Congressionally Designated Alignment, BLM 2015

**NOTES:**  
 • The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.  
 • Substation symbols do not necessarily represent precise locations.  
 • The B2H Project area boundary is defined by buffering the alternative route centerlines.  
 • Other federal land ownership may include lands administered by the U.S. Department of Energy, Bonneville Power Administration, Federal Aviation Administration, General Services Administration, or U.S. Department of Agriculture (except U.S. Forest Service).  
 • Each alternative route is composed of links, which are discrete sections of the route sharing common endpoints determined by the point of intersection with other adjacent links; the common endpoint is referred to as a link node. Links generally are numbered from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with other adjacent alternative routes; the common endpoint is referred to as a segment node.  
 • No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Alternative routes last revised: February 18, 2016  
 Final EIS: November 2016

0 5 10 15 30  
Miles  
1:950,400 or 1 inch = 15 miles



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<b>Table S-5. Agency Preferred Alternative Route Links</b>			
<b>Segment Number</b>	<b>Alternative Route</b>	<b>Link(s)</b>	<b>Length (miles)<sup>1</sup></b>
Segment 1	West of Bombing Range Road Crossover to the East of Bombing Range Road to Southern Route	1-1, 1-3, 1-7, 1-27, 1-26a, 1-25a,1-35, 1-36, 1-38, 1-62, 1-64, 1-66, 1-65, 1-71, 1-77	95.7
Segment 2	Glass Hill with Variations S2-A2, S2-D2, and S2-F2	2-3, 2-7, 2-15, 2-20, 2-30, 2-40, 2-46, 2050, 2-52, 2-60, 2-70, 2-80, 2-90	33.7
Segment 3	Flagstaff B – Burnt River West	3-10, 3-12, 3-14, 3-20, 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48, 3-52, 3-54, 3-56, 3-60, 3-62, 3-66, 3-71, 3-73, 3-94	55.7
Segment 4	Tub Mountain South	4-1, 4-5, 4-15, 4-17, 4-20, 4-30, 4-75	40.5
Segment 5	Applicant’s Proposed Action with Variation S5-B2	5-1, 5-5, 5-10, 5-15, 5-40, 5-45, 5-70, 5-75	40.6
Segment 6	Applicant’s Proposed Action with Variation S6-B2	6-1, 6-10, 6-20, 6-30, 6-35	27.7
<b>Total (approximate)</b>			<b>293.9</b>
<i>Table Note:</i> <sup>1</sup> Mileage calculations are approximate as of March 4, 2016.			

The Agency Preferred Alternative differs from the environmentally preferable action alternative in three areas in Segment 1, 3, and 6.

In Segment 1, the Agency Preferred Alternative exits the proposed Longhorn Substation and proceeds south. From the northeastern corner of the NWSTF Boardman, the alternative crosses the boundary into the NWSTF Boardman and parallels the eastern boundary of the NWSTF Boardman on the west side of Bombing Range Road for 7 miles. At that point, the route crosses over Bombing Range Road to the east (approximately 350 feet), intersects with and follows the southernmost east-west route, proposed by Morrow and Umatilla counties and local stakeholders, to the east toward the Blue Mountains where it intersects with the follows the alignment of all the alternative routes to the end of Segment 2. The northern portion of the Agency Preferred Alternative (1) repurposes an existing use area currently occupied by the BPA 690-kV transmission line on the NWSTF Boardman, (2) avoids airspace conflicts by complying with the Navy’s requested 100-foot height restriction for transmission lines along Bombing Range Road, (3) avoids and/or minimizes effects on areas planned for potential windfarm development, (4) avoids and/or minimizes effects on high-value agricultural lands, and (5) was developed and recommended through extensive coordination among the BLM, Navy, Morrow and Umatilla counties, and local stakeholders.

In Segment 3, only an area east of Baker City. The Agency Preferred Alternative is slightly east of the environmentally preferable alternative; the BLM collaborated with Baker County to identify a route variation in this area of dense agriculture to minimize impacts on agricultural operations.

In Segment 6, the environmentally preferable action alternative maximizes use of the designated utility corridors (BLM-designated and West-wide Energy Corridor) to the extent practicable. The Agency Preferred Alternative differs from the environmentally preferable action alternative in the northwestern

portion of the segment, which is the result of coordination with Owyhee County and a request to avoid crossing private land south of Succor Creek.

## **CONSULTATION AND COORDINATION**

In addition to the planning, analysis, and review activities of the EIS preparation, the BLM is conducting consultation, coordination, and public participation. Consultation started with public scoping and will continue throughout the course of the B2H Project and potentially through the course of the right-of-way. The purpose of the consultation and coordination program is to encourage interaction between the BLM and other federal, state, and local agencies; Native American tribes; and the public. The BLM's intent is to inform the public about the B2H Project and solicit input to assist in analysis and decision making.

The BLM has made formal and informal efforts to involve, consult, and coordinate with other agencies, Native American tribal governments, and the public. These efforts ensure that the most appropriate data have been gathered and analyzed and that agency policy and public sentiment and values are considered and incorporated.

### *CULTURAL RESOURCES*

Section 106 (54 U.S.C. 306108) of the NHPA (54 U.S.C. 300101 et seq.) requires federal agencies to take into account the effect of their undertakings on any district, site, building, structure, or object that is included in or is eligible for inclusion in the NRHP. Regulations for the implementation of Section 106 are defined in 36 CFR Part 800 – Protection of Historic Properties. These regulations define how federal agencies meet their statutory responsibilities as required under the law. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties (36 CFR 800.1 and 36 CFR 800.2). These parties include the ACHP, SHPOs, THPOs, Native American sovereign tribal governments, state and other federal agencies, and individuals or organizations with a demonstrated interest in the undertaking due to their legal or economic relation to the undertaking or affected properties or their concern with the effects of undertakings on historic properties.

The BLM, as lead federal agency for compliance with Section 106 of the NHPA, initiated Section 106 consultation with the SHPOs/THPO and others pursuant to 36 CFR Part 800.6 and 800.14(b) of the ACHP's regulations in August 2008. The Section 106 process is separate from, but is often conducted parallel with, the preparation of an EIS. Consultation under Section 106 of the NHPA is ongoing and will continue during post-EIS phases of B2H Project implementation.

Coordination among the agencies is carried out through a Cultural Resources Work Group, which meets via conference call once periodically to discuss status of the B2H Project to discuss status of the B2H Project, Programmatic Agreement, and key cultural resource issues related to the B2H Project, as well as the approach to address these issues. Consultation includes formation of a consulting-party workgroup to collaborate on development of a Programmatic Agreement. This legally binding document identifies the terms and conditions agreed upon to provide for the phased approach to fulfill requirements of Section 106: conduct consultation, identify historic properties, assessment of adverse

effects, and resolve adverse effects. The Programmatic Agreement will be completed prior to issuance of the RODs; however, stipulations will be included in the right-of-way grant or other land-use authorization requiring completion of agency-approved treatment of historic properties needing further investigation before any ground-disturbing activities commence in the vicinity of the historic properties. It should be noted that the Navy is responsible for consultation on lands administered by the Navy and would lead consultation, if needed, for sensitive historic properties that could be affected on the NWSTF Boardman.

#### *GOVERNMENT-TO-GOVERNMENT CONSULTATION AND SECTION 106 TRIBAL CONSULTATION*

Government-to-government tribal consultation—guided by secretarial orders, executive orders, and BLM instructional memoranda—involves the process for seeking, discussing, and considering Native American tribes' views on policies, undertakings, and decision such as environmental review of the B2H Project. In letters dated August 21, 2008, the BLM initiated consultation with eight tribes that previously expressed claims to cultural affiliation with the B2H Project area to inform them of the B2H Project and to inquire about their interest in continuing government-to-government consultation. The BLM sent letters to the Burns Paiute Tribe, Confederated Tribes of the Colville Reservation, CTUIR, Confederated Tribes of the Warm Springs Indian Reservation, Shoshone-Bannock Tribes of the Fort Hall Indian Reservation, Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, Fort McDermitt Paiute and Shoshone Tribe, and the Nez Perce (including the Joseph Band of the Nez Perce). Of the eight tribes, four expressed interest in continuing government-to-government consultation—the Burns Paiute Tribe, the CTUIR, the Shoshone-Bane-Bannock Tribes of the Fort Hall Indian Reservation, and the Shoshone-Paiute Tribes of the Valley Indian Reservation. Subsequently, on May 4, 2011, a revised scoping report was mailed to the aforementioned eight tribes, the Columbia River Inter-Tribal Fish Commission, the Northwest Indian Fisheries Commission, and the following Native American tribes (Yakama Nation; Affiliated Tribes of Northwest Indian; Confederated Tribes of Grand Ronde; Klamath Tribe; Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians; Coquille Indian Tribe; Puyallup Tribe; Cow Creek Band of Umpqua Indians; Kalispel Tribe; Fort Bidwell Indian Community; Confederated Tribes of Siletz Indians; Spokane Tribe; and Samish Indian Nation).

#### *BIOLOGICAL RESOURCES*

Section 7 of the ESA, as amended, calls for interagency cooperation to conserve federally listed species and designated habitat. The BLM is consulting with the USFWS and National Oceanic and Atmospheric Administration (NOAA) Fisheries to address threatened, endangered, or candidate species of plants, wildlife, and fish that may be affected by the B2H Project. Informal consultation between the BLM (including cooperating agencies) and the USFWS and NOAA has continued throughout the development of the EIS and has included meetings, conference calls, letters, and other correspondence. Coordination among the agencies is carried out through a Biological Resources Task Group, which meets via conference call once each month to discuss status of the B2H Project and key biological resource issues related to the B2H Project, as well as the approach to address these issues.



Two biological assessments are being prepared to evaluate the effects of the route selected for the B2H Project on species listed as threatened or endangered—one evaluating the effects on terrestrial and inland aquatic species will be submitted to the USFWS and one evaluating the effects on anadromous fish species (those species that migrate inland from the ocean to spawn) will be submitted to NOAA Fisheries. Submittal of the biological assessments for species with a “may adversely affect” determination will initiate the formal Section 7 consultation process. The USFWS and NOAA Fisheries will prepare and complete biological opinions before the RODs are signed. It should be noted that the Navy is responsible for Section 7 consultation on lands administered by the Navy and would lead consultation, if needed, for ESA species on the NWSTF Boardman.