BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IN THE MATTER OF IDAHO POWER COMPANY'S **PETITION FOR CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY**	**Docket: PCN 5** **Motion to Admit Testimony and Exhibits and Declaration** **Intervenor: Susan Geer, representing Whitetail Forest LLC and Glass Hill State Natural Area**

Date: April 25, 2023

Susan Geer, Intervenor

I, Susan Geer, Intervenor, move to admit the following testimony and exhibits into the record for the OPUC Contested Case PCN-5. Lists are as they were when previously submitted.

Susan Geer's testimonies: Opening/Rebuttal/Cross-examination Testimony PCN5

Susan Geer (Geer/100): Opening Testimony (February 1, 2023)

Susan Geer's Opening Testimony Exhibits

101. EFSC contested case Pro Se Petitioners responses to Ex Parte communication in the matter of Protected Areas rulemaking 59 p
102. Public comments on EFSC Protected Areas rulemaking 14 p
103. Susan Geer's public comment on PCN 5 p
104. Karen Antell's article on Twin Lake Wetlands for Protect this Place series, the Revelator 7 p
105. Revelator article The Importance of Ponds 6 p
106. Michael McAllister memo to Stu Spence of City Parks Department in 2017 3 p
107. Conservation Easement Deed dated December 28, 2001 granted by Joel Rice to Rocky Mountain Elk Foundation 23 p
108. Joel Rice final public comment to EFSC rulemaking on Protected Areas 2 p
109. *Vegetation of Winn Meadows*, 2011, by Dr. Karen Antell 45 p
110. La Grande Observer article from 2001 on "Miracle Mile" 2 p
111. Susan Geer's Testimony in EFSC contested case SR-5 10 p
112. Letter stating Registration of Glass Hill State Natural Area by Oregon Parks and Recreation Dept. in 2019 1 p
113. Article of Designation for Glass Hill State Natural Area in 2020 7 p
114. Oregon Natural Areas Plan 2020 189 p
115. Email from David Giblin concerning a new species of *Pyrrocoma* from Morgan Lake area 3 p
116. Franklin and Lindenmayer 2009 2 p
117. La Grande Observer article concerning the City's opposition to B2H 1 p
118. Proclamation by Mayor Clements of La Grande opposing B2H 1 p
119. Minutes of the B2H County Advisory committee on July 28, 2016, Letter from the Committee to Chairman Howard, and Letter from Chair Howard to the BLM 8 p
120. Michael McAllister's letter to Todd Cornett of ODOE with attachments including Comparative Analysis of Morgan Lake route and Glass Hill route 38 p

121. Memo of Michael McAllister to Judge Mellgren concerning his Supreme Court case 2 p

122. January 10 public comment on PCN 5 by Michael McAllister 6 p

123. Expert Witness Testimony of Michael McAllister including five Attachments.

McAllister LIST OF ATTACHMENTS:

1. ApASC Attachment B 2017 Supplemental Siting Study pages 1-4 4p 13

2. ASC Exhibit B Project Description see Page B-39, Table B-6. "Proposed and Alternative 14 Corridor Adjustments (macro changes) since Preliminary Application for Site Certificate 15 (February 2013)" 2p 16

3. ApASC Attachment B 2017 Siting Study, Page 9-10, 3.2.3, Union County, Oregon 17 2p 18

4. Email letter from Idaho Power Company to Brad Allen dated February 27, 2015. 19 1p 20

5. Energy Facility Siting Council's La Grande Hearing – Day 2 – 08/30/2022, pages 379 21 and 483 2

Susan Geer (Geer/200): Rebuttal Testimony (March 20, 2023)

I. Susan Geer's Rebuttal of Michael Ottenlips' Reply

II. Susan Geer's Rebuttal of Mitch Colburn's Reply

III. Rebuttal Testimony of Expert Witness Michael McAllister to Michael Ottenlips' and Mitch Colburn's Replies

IV. List of Exhibits

Exhibit 1 Glass Hill Coalition handout circulated at February 28, 2015 public meeting

Exhibit 2 2017 Letter from City Manager Robert Strope to Oregon Department of Energy

Exhibit 3 Greg Larkin's Data Request Number 4: Exhibit 401 A Sworn Statement from Irene Gilbert dated March 3, 2023

Exhibit 4 Exception to ALJ Ruling on Summary Determination and Proposed Contested Case Order Issue TE-1 Susan Geer

Susan Geer's Cross Examination Exhibits:

Exhibits were originally provided in Huddle then submitted to Docket (April 19, 2023) and here the are numbered for convenience

301. Susan Geer's Response to Idaho Power Data Request No. 1, including Michael McAllister's Narrative and Map (March 24,2023 via Huddle)

302. IPC Response to Staff Data Request No. 90

303. IPC Response to Staff Data Request No. 90, Attachment 1

304. IPC Response to Staff Data Request No. 90, Attachment 2

305. IPC Response to Staff Data Request No. 90, Attachment 3

306. IPC Response to Staff Data Request No. 90, Attachment 4

306.5 IPC Response to Staff Data Request No. 60

307. IPC Response to Staff Data Request No. 60, Attachment 1

308. IPC Response to Staff Data Request No. 60, Attachment 2

309. IPC Response to Staff Data Request No. 60, Attachment 3

310. IPC Response to Staff Data Request No. 60, Attachment 4

311. IPC Response to Staff Data Request No. 60, Attachment 5

312. IPC Response to Staff Data Request No. 60, Attachment 6

313. IPC Response to Staff Data Request No. 60, Attachment 7

314. IPC Response to Staff Data Request No. 60, Attachment 8

315. IPC Response to Staff Data Request No. 60, Attachment 9

316. IPC Response to Staff Data Request No. 60, Attachment 10

317. IPC Response to Staff Data Request No. 60, Attachment 11

318. IPC Response to Staff Data Request No. 56

318 a. IPC Response to Staff Data Request No. 56, attachment 1

318 b. IPC Response to Staff Data Request No. 56, attachment 2

319. IPC Response to Staff Data Request No. 22

320. IPC Supplemental Response to Staff Data Request No. 22

321. IPC Response to Staff Data Request No. 26

322. IPC Response to Staff Data Request No. 27

323. IPC Response to Staff Data Request No. 28

324. IPC Response to Staff Data Request No. 83

325. IPC Response to Staff Data Request No. 84 Redacted

326. none

327. IPC Response to Staff Data Request No. 109

328. IPC Response to Staff Data Request No. 110

329. IPC Supplemental Response to Staff Data Request No. 110

330. IPC Response to Staff Data Request No. 110, Attachment 1

331. IPC Response to Staff Data Request No. 111

IPC's testimonies: Response/Reply Testimony PCN5

- Lindsay Barretto (Idaho Power/400): B2H Project Costs, Schedule, Mitigation, and Permitting/Regulatory Approvals

- Idaho Power/401: CONFIDENTIAL – B2H Project Cost Estimate (Feb. 7, 2023)
- Idaho Power/402: Updated Attachment 16 Regarding Permit Status
- Idaho Power/403: ODOE Construction and Mitigation Plan Timeline
- Idaho Power/404: CONFIDENTIAL – Time and Location Schedule
- Idaho Power/405: Updated Landowner List
- Idaho Power/406: Memorandum of Agreement with City of La Grande Regarding Morgan Lake Park

- Jared L. Ellsworth (Idaho Power/500): Partner Agreements and Need for B2H
- Idaho Power/501: CONFIDENTIAL – Construction, Ownership, Operation, Asset Exchanges and Service Agreements Necessary for B2H
  - Idaho Power/502: Updated BPA Letter to the Region Regarding B2H and Southeast Idaho Load Service (Jan. 9, 2023).
  - Idaho Power/503: BPA B2H Workshop Presentation (Jan. 23, 2023)
  - Idaho Power/504: Maps Identifying BPA Customers and Utility Service Territories
  - Idaho Power/505: Comments from BPA Customers and Stakeholders
  - Idaho Power/506: Resource Adequacy in the Pacific Northwest (Mar. 2019)
  - Idaho Power/507: PRINCETON UNIV., Net Zero America Potential Pathways, Infrastructure, and Impacts (Dec. 15, 2020)

- Mitch Colburn (Idaho Power/600): B2H Siting History and Alternative Routes
- Idaho Power/601: Idaho Power Response to Staff Data Request No. 60, Attachment 1, Final Environmental Impact Statement Narrative Comparison
  - Idaho Power/602: 2010 Siting Study
  - Idaho Power/603: 2012 Supplemental Siting Study
  - Idaho Power/604: 2015 Supplemental Siting Study
  - Idaho Power/605: 2017 Supplemental Siting Study

- o Idaho Power/606: Letter of Protest and Objection from CTUIR to BLM (Dec. 27, 2016)
- o Idaho Power/607: Ruling and Order on Motions for Summary Determination on Contested Case Issues FW-13, R-2, and SP-2
- o Idaho Power/608: Idaho Power's Reply to Michael McAllister's Response to Idaho Power's Motion for Summary Determination of Contested Case Issues SP-2 and FW-13 (July 23, 2021)
- o Idaho Power/609: Idaho Power's Response to Staff's Data Request No. 90 and Referenced Attachments
- o Idaho Power/610: Mapset of Malheur County Utility Corridors
- o Idaho Power/611: Final Environmental Impact Statement, Chapter 2
- o Idaho Power/612: Oregon Parks and Recreation Commission Meeting Agenda Item 8b (Nov. 18, 2020)
- o Idaho Power/613: Glass Hill Registration Confirmation Letter
- o Idaho Power/614: Susan Geer's Exception to Hearing Officer's Proposed Contested Case Order for Issue SR-5
- o Idaho Power/615: Oregon Parks and Recreation Commission Meeting Packet (Sept. 18, 2019)
- o Idaho Power/616: Susan Geer DPO Comments and Petition
- o Idaho Power/617: Notice of Ex Parte Communication with Attachment A

- o Kirk Ranzetta (Idaho Power/700): Cultural Resources
- o Idaho Power/701: Curriculum Vitae of Kirk Ranzetta
- o Idaho Power/702: Second Amended Project Order

- Idaho Power/703: Idaho Power Response to Staff Data Request No. 15 - Attachment 1, Application for Site Certificate, Exhibit S
- Idaho Power/704: Letter from Gary Burke to ODOE (Apr. 19, 2019)
- Idaho Power/705: EFSC Rebuttal Testimony of Dennis Johnson (Nov. 12, 2021)
- Idaho Power/706: Class 4 Undergrounding Cost Estimate (Nov. 8, 2021)
- Idaho Power/707: John Williams Response to Idaho Power Data Requests No. 1-6 (Feb. 14, 2023)

- Stephen Anderson (Idaho Power/800): Cultural Resources on Williams Property
- Idaho Power/801: Curriculum Vitae of Stephen Anderson
- Shane Baker (Idaho Power/900): Tribal Consultation Process
- Idaho Power/901: Final Environmental Impact Statement, Chapter 4
- Idaho Power/902: Final Environmental Impact Statement, Appendix A
- Idaho Power/903: Programmatic Agreement
  - Idaho Power/904: Consultation Log and Programmatic Agreement Tracking Sheet
- Jake Weigler (Idaho Power/1000): Environmental Justice Communities
- Idaho Power/1001: Curriculum Vitae of Jake Weigler
  - Idaho Power/1002: Idaho Power's Response to Staff Data Request 24, Attachment 4, 2011 B2H Community Advisory Report
  - Idaho Power/1003: Metadata for EJ Communities Mapping
  - Idaho Power/1004: EFSC Rebuttal Testimony of Kurtis Funke
- Mark Bastasch (Idaho Power/1100): Transmission Line Noise Analysis
- Idaho Power/1101: Curriculum Vitae of Mark Bastasch

- Idaho Power/1102: ODEQ, Staff Guidance on Noise Control Issues (July 2003)
- Idaho Power/1103: Idaho Power's Response to Staff Data Request No. 26, Attachment 5, ASC, Exhibit X
- Idaho Power/1104: OAR 340-035-0035 – Table 8
- Idaho Power/1105: ODEQ, Sound Measurement Procedure Manual (Sept. 4, 1974)
- Idaho Power/1106: Reanalysis of MP 11 Area – Morgan Lake Alternative
- Idaho Power/1107: M. Bastasch Testimony, Cross-Examination Hearing, Day 1 (Jan. 10, 2022)
- Idaho Power/1108: Miller, L., Sound Levels of Rain and of Wind in the Trees (Nov. – Dec. 1998)
- Idaho Power/1109: BPA, I-5 Corridor Reinforcement Final EIS (Feb. 2016)
- Idaho Power/1110: Merriam-Webster Online Dictionary, Definition of Infrequent (Feb. 20, 2023)
- Idaho Power/1111: Golder Associates Memorandum (Dec. 19, 2017)
- Idaho Power/1112: Written Rebuttal Testimony of Ken Kosky, Golder Associates, on behalf of ODOE (Nov. 12, 2021)
- Idaho Power/1113: BPA Memorandum on Sound Level Limits for BPA Facilities (May 26, 1982)
- Idaho Power/1114: Federal Highway Administration, Highway Traffic Noise: Analysis and Abatement Guidance (Dec. 2011)
- Idaho Power/1115: EQC, Adoption of Statewide Rules Related to Noise Pollution from Industrial and Commission Sources and Changes to the Sound

Measurement Procedures Manuals, NPCS-1,2 (Sept. 4, 1974)

- Christopher W. Lautenberger (Idaho Power/1300): Wildfire Risk and Mitigation
- Idaho Power/1301: Curriculum Vitae of Christopher W. Lautenberger
- Idaho Power/1302: Idaho Power's Response to Staff Data Request No. 26, Attachment 1, Application for Site Certificate, Exhibit B
    - Idaho Power/1303: In re Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project, A.06-08-010, D. 08-12-058 (California PUC, Dec. 18, 2008)
    - Idaho Power/1304: In re Application of San Diego Gas & Electric Company (U 902 E) for a Certificate of Public Convenience and Necessity for the Sunrise Powerlink Transmission Project, A.06-08-010, D.08-12-058, Appendix C (Dec. 24, 2008)
    - Idaho Power/1305: Snow Fire Incident Information Fact Sheet (June 5, 2015)
    - Idaho Power/1306: U.S. Attorney's Office, Dist. of Or., PacifiCorp to Pay $3.4 Million in Civil Settlement for Ramsey Canyon Fire (June 9, 2020)
    - Idaho Power/1307: PG&E Fire Incident Data Compiled from 2014-2021
    - Idaho Power/1308: SCE Fire Incident Report Data Compiled from 2014-2021
    - Idaho Power/1309: SDG&E Fire Incident Report Data Compiled from 2014-2021
    - Idaho Power/1310: Docket UM 2209, Idaho Power Company's 2023 Wildfire Mitigation Plan (Dec. 29, 2022)
    - Idaho Power/1311: EFSC Contested Case, Deposition of Craig Kretschmer
- Ottenlips (Idaho Power/1400) – Environmental Review of Union County Routes

- o Idaho Power/1401: Curriculum Vitae of Michael Ottenlips
- o Idaho Power/1402: Survey Results from Rice Glass Hill Parcel
- o Stippel (Idaho Power/1500) – Micrositing and Project Design

Surrebuttal Testimonies in CPN5

Lindsay Barretto (Idaho Power/1600): B2H Project Cost Estimate, Permitting Updates, & Mitigation Plans

- o Idaho Power/1601: Updated Permit Status Chart
- o Idaho Power/1602: Updated ODOE Plans Tracking Table
- o Idaho Power/1603: BLM Construction Plan of Development Tracking Table
- o Idaho Power/1604: Updated Landowner List

Jared Ellsworth (Idaho Power/1700): Need and Justification for B2H

Mitch Colburn (Idaho Power/1800): Siting History and Alternative Routes

- o Idaho Power/1801: In re Application for a Site Certificate for the Wheatridge Wind Energy Facility, Final Order (Apr. 2017)
- o Idaho Power/1802: ODOE Diagram re Wheatridge Site Certificate History
- o Idaho Power/1803: George Plaven, Green Energy Corridor, Eastern Oregonian News Article (May 18, 2017)
- o Idaho Power/1804: Letters of Support for West of Bombing Range Road Alternative
- o Idaho Power/1805: Letter from the Glass Hill Coalition (May 6, 2019)

Joseph Stippel (Idaho Power/1900): Wind Loading, Seismic, Operating Voltage

- o Idaho Power/1901: FEMA Fact Sheet: Highlights of Significant Changes to the Wind Load Provisions of ASCE 7-22

- Idaho Power/1902: Updated Oregon Building Code with October 2022 Amendments
- Idaho Power/1903: Excerpt from Myers Data Response - Narrative Describing Figure 3-1
- Idaho Power/1904: Report from the National Weather Service on the Enhanced Fujita (<EF=) Scale
- Idaho Power/1905: National Oceanic and Atmospheric Administration Storm Events Database – Tornadoes in Oregon from 01/01/1950 to 12/31/2022

Mark Bastasch (Idaho Power/2000): Noise Analysis

- Idaho Power/2001: Excerpt from Idaho Power Response to Larkin DR 19 – Attachment 2, EFSC Proposed Order on ASC (July 2, 2020)
- Idaho Power/2002: OAR 340-035-0035 – Table 9
- Idaho Power/2003: EFSC Exceptions Hearing – Day 3 (Aug. 31, 2022)

Kirk Ranzetta (Idaho Power/2100): Cultural Resources

Stephen Anderson (Idaho Power/2200): Cultural Resources – Direct Impacts

Christopher Lautenberger (Idaho Power/2300): Wildfire Risk and Mitigation

- Idaho Power/2301: Butte County District Attorney's Office, The Camp Fire Public Report – A Summary of the Camp Fire Investigation
- Idaho Power/2302: NBC Bay Area, PG&E Criminally Charged for Kincade Fire
- Idaho Power/2303: Homeland Infrastructure Foundation-Level Data
- Idaho Power/2304: NFIRS Reports on Gilliam and Sherman County Fires

Michael Ottenlips (Idaho Power/2400): Indirect Impacts to Habitat and Natural Resources Surveys

- o Idaho Power/2401: Excerpts from Exhibit P1 of the ASC
- o Idaho Power/2402: Excerpts from Exhibit P2 of the ASC
- o Idaho Power/2403: Excerpts from Exhibit P3 of the ASC

Cross Examination hearing: recordings (April; 19 and 20, 2023)

I hereby declare under penalty of perjury under the laws of the State of Oregon that I prepared the testimony and exhibits in this proceeding, listed and cited above, and that to the best of my knowledge and belief, declare the statements, testimony and exhibits to be true and that they were made for use by the Commission as evidence in this proceeding.

Dated this twenty fifth (25) day of April, 2023.

/s/ Susan Geer

Susan Geer

PCN 5
Susan Geer's Response to
Idaho Power Data Request No. 1

Issued: March 24, 2023

IDAHO POWER DATA REQUEST NO. 1:

1. Please refer to Question and Answer 8 of Mr. McAllister's Rebuttal Testimony, on page Susan Geer/200, Geer/20. Specifically, Mr. McAllister's assertion that "The Glass Hill Alternative will require less than a mile of new road, where the Morgan Lake Alternative requires many miles of new roads."

a. Please identify the existing roads which Mr. McAllister believes would serve as access roads to the Glass Hill Alternative.

b. Please provide any and all documentation supporting Mr. McAllister's assertion that the Glass Hill Alternative will require "less than a mile of new road."

c. Please identify the new road or road segments that Mr. McAllister believes would be necessary to construct the Glass Hill Alternative.

SUSAN GEER's RESPONSE

Mr. McAllister has provided a Narrative and a Map below. Short answers to questions a-c:

a. The existing roads Mr. McAllister has identified as access for the Glass Hill Alternative are shown in yellow and green on the attached Map. This is further explained in Mr. McAllister's Narrative.
b. Refer to the attached Map, where new roads required for the Glass Hill Alternative are shown in orange and appear to be less than a mile.
c. New road segments are shown in orange.

MICHAEL MCALLISTER'S NARRATIVE

Mr. McAllister's asserts that "The Glass Hill Alternative will require less than a mile of new road, where the Morgan Lake Alternative requires many miles of new roads." The basis of this assertion is Mr. McAllister's response to Mr. Colburn's Reply Testimony Idaho Power/600, Colburn/40, Line 21:

> Q. Why did Idaho Power decide not to include the Glass Hill Alternative in the ASC?
>
> A. In the 2015 Supplemental Siting Study provided at EFSC as Attachment B-4 to Exhibit B of the ASC, Idaho Power explained that:
>
> The Glass Hill Alternative is not being carried forward from the pASC in to the Amended pASC because ---- "the Glass Hill Alternative has steep terrain and would require the development of a new road system."

In response, Mr. McAllister replied (McAllister's Rebuttal Testimony, page 20, lines 11-15):

> Mr. Colburn's statement that the Morgan Lake Alternative has better road access is not true. The Glass Hill Alternative will require less than a mile of new road, whereas the Morgan Lake

> Alternative requires many miles of new roads. The statement that the Morgan Lake Alternative is topographically less rough terrain is not true – the Morgan Lake Alternative crossing of Sheep Creek, Rock Creek, and Graves Creek is rougher terrain than that of the Glass Hill Alternative.

At issue is a determination of which route requires more new access roads, resulting in negative impacts and environmental degradation. Mr. Colburn's (IPC's) Testimony states "Glass Hill Alternative has steep terrain and requires a new road system." This is presented as a primary reason for IPC's selection of the Morgan Lake Alternative. Mr. McAllister disputes this; the Glass Hill Alternative requires far fewer new access roads.

The BLM FEIS recognizes that Glass Hill Alternative (variation S2 D2, Exhibit 1) would require fewer miles of new road than IPC's FEIS Proposed Route (Exhibit 2, now termed "Glass Hill Route" by Colburn and Ottenlips in their Response Testimonies). B2H Final EIS and Proposed LUP Amendments, Chapter 2-Proposed Action Alternatives, Page 2-23, GLASS HILL ROUTE-VARIATION OPTION:

> Comments on the Draft EIS recommended a variation of the Glass Hill Alternative. The Glass Hill Alternative spans the canyons of Graves Creek, Little Rock Creek, and Rock Creek, and then onto the high elevation of Cowboy Ridge. The recommended route-variation option would move the route approximately 2.5 miles west of Cowboy Ridge, which would avoid the spring, summer, and fall habitat of a large concentration of elk; avoid the high elevation of Cowboy Ridge, an ecological area unique to the Blue Mountain Province; further reduce potential views of a transmission line from Morgan Lake recreation area; and move the route into an area with better road access **thereby reducing the miles of new roads needed for the B2H Project**. The Glass Hill route-variation option is addressed as a variation of the Glass Hill Alternative route (Section 2.5.2.2).

Mr. McAllister agrees with all aspects of the above Final EIS statement. Mr. McAllister offers the following explanation of "better road access" for the Glass Hill Alternative (variation S2 D2) compared to IPC's Proposed Route down Cowboy Ridge (aka Colburn's "Glass Hill Route"). In his Testimony Colburn calls Morgan Lake Alternative (known as variation S2 C2 in the FEIS, Exhibit 3) a variation of IPC's FEIS Proposed Route.

Mr. McAllister provides a user-friendly topographic road map format for his comparison of available existing roads to access Glass Hill Alternative (variation S2 D2) vs. Morgan Lake Alternative (Map, attached). The road map provided is a "cutout" from the current map, La Grande West Ranger District, produced by the Wallowa-Whitman National Forest in the year 2002. This is the best road map available in Union County and is the one used by Union County Search and Rescue. On this map, Mr. McAllister has transcribed Glass Hill Alternative variation S2 D2 (Blue), and IPC's Morgan Lake Alternative (Pink). The two routes are transcribed from Idaho Power's shapefile superimposed on Google Earth imagery. Existing mapped roads that Mr. McAllister believes would serve as access roads to the Glass Hill Alternative are highlighted (Yellow). More recently developed existing logging roads are highlighted in (Green). New Road segments that Mr. McAllister believes would be necessary to construct the Glass Hill Alternative (data request c.) are highlighted in (Orange).

Looking at the map provided by Mr. McAllister, start with the NEPA Glass Hill Alternative variation S2 D2 (Blue). The map shows the location where IPC's Morgan Lake Alternative departs from the NEPA Glass Hill Alternative, this point is approximately ½ mile south from HWY 244 and the Grande Ronde River.

Rock Creek Road leads south from HWY 244 as the primary road access to where the two routes diverge. From where the two routes diverge, the Rock Creek Road (Yellow) mostly parallels the NEPA Glass Hill Alternative for approximately 6 miles to where both the access road and the NEPA Route cross Rock Creek. For this 6-mile stretch both the Rock Creek Road and the NEPA Glass Hill Alternative are constructed on a gentle basalt plateau landscape scarcely over 20 percent slope. In addition to the mapped Rock Creek Road, there are new unmapped logging roads (Green) that were built in the mid to late 1990s by Boise Cascade and Idaho Timber. One such "new" logging road connects the Rock Creek Road east to the Glass Hill Road, through Map Sections: T. 4. S, R. 37. E, Section 1, and T. 4. S, R. 38 E, Section 6. It is also in these Sections, 1 and 6, where Mr. McAllister believes that new access road (Orange) construction would be required for the NEPA Route. It is this need for new access road construction that Mr. McAllister was referring to when stated that, "The Glass Hill Alternative requires less than a mile of new road, where the Morgan Lake Alternative requires many miles of new roads." For clarification, Mr. McAllister is speaking to the primary access roads and not the myriad of two track trails needed for construction.

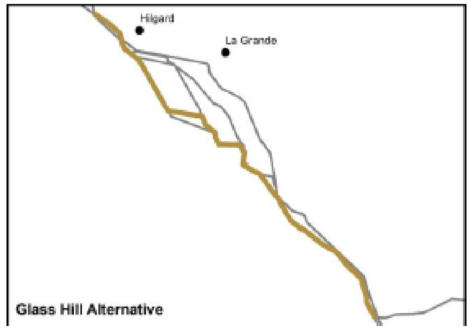
In sharp contrast to the Agency Preferred Glass Hill Alternative, the Morgan Lake Alternative deviates east and in approximately 1.5 miles, crosses Graves Creek, Rock Creek, and Sheep Creek near their confluence, which is critical Chinook Salmon Habitat. Here some adjacent roads are washed-out, including the road spur shown going east up Sheep Creek in Map Section 9. From here, to the east and south, the country is nearly "roadless" for three miles until the route crosses Morgan Lake Road. It is also noteworthy to point out that from where the Morgan Lake Alternative crosses over Morgan Lake Road, this County Road was abandoned (1983) for the four miles west to the Rock Creek Road. Much of that stretch of road has been impassable into Rock Creek for nearly 40 years due to erosion failures. Without Road Access, the landscape of lower sheep Creek is topographically diverse with moderate to steep slopes. The undulating topography, by nature requires more roading to compensate for variable slopes and aspect changes. This 3 mile "roadless" stretch is another basis for Mr. McAllister's challenge to Mr. Colburn's assertion that the "the Glass Hill Alternative has steep terrain and would require the development of a new road system." Looking at the map provided, you will notice that the Morgan Lake Alternative (Pink) crosses another 2 miles of "roadless" ridge between Morgan Lake Road south to where the Morgan Lake Alternative crosses over Mill Creek Road.

One of the primary concerns that has been consistently expressed by Union County, the City of La Grande, and residents is that the use of La Grande City streets and the Morgan Lake Road as the primary road access for the construction of B2H is not acceptable. The Morgan Lake Alternative requires this access for much of its construction. Alternatively, the NEPA Glass Hill Alternative variation S2 D2has no such requirement; the entirety of the NEPA route is accessed from the north by HWY 244 and Rock Creek Road, and from the south by the Ladd Canyon and the Glass Hill Road system. This is what the citizens of Union County have spoken out about consistently. The cumulative effects of new road construction disturbance resulting from Morgan Lake Alternative would be greater by at least an order of magnitude. Existing road systems, topography, and soil type variations dictate this outcome. The roads map Mr. McAllister has provided expresses these factors well.

Exhibit 1

GLASS HILL ALTERNATIVE [LINKS 2-1, 2-5, 2-15, 2-20, 2-30, 2-40, 2-42, 2-47, 2-50, 2-52, 2-60, 2-75, 2-85, 2-95; 33.7 MILES]

The Glass Hill Alternative was addressed in the Draft EIS. The alternative route was developed in response to various considerations of landowners, environmental resources, visual effects, and constructability expressed during the Community Advisory Process (Idaho Power Company 2012: 10-15) and scoping for the NEPA process to address concerns regarding proximity of the Applicant's Proposed Action Alternative to Ladd Marsh Wildlife Area and concerns about the visibility of the transmission line from La Grande in Union County.

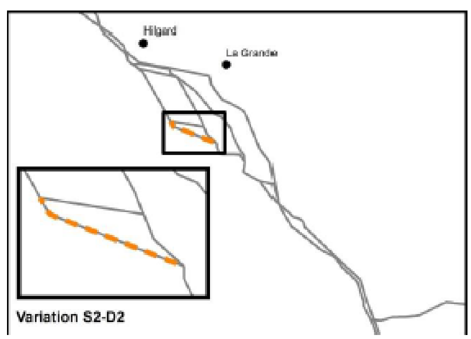


The alternative route continues from Segment 1 traveling to the southeast crossing Oregon Route 244, near Hilgard Junction State Park, separating from the Applicant's Proposed Action Alternative by continuing southeast adjacent to Little Graves Creek located 3 miles west of Morgan Lake, before turning to the east to rejoin the Applicant's Proposed Action Alternative 5 miles southwest of La Grande. The transmission line then would continue to the southeast for 11 miles before crossing Interstate 84 approximately 15 miles south of La Grande. Continuing to the southeast, the Glass Hill Alternative crosses Powder River to the end of Segment 2 on Riverdale Hill.

VARIATION S2 AREA D

Variation S2-D1 (Links 2-42, 2-47; 4.3 miles) shares the same alignment as the Glass Hill Alternative starting at Little Graves Creek and crossing Graves Creek, Little Rock Creek, and Rock Creek as this route travels to the southeast toward Glass Hill.

Variation S2-D2 (Link 2-46; 4.1 miles) was recommended as part of comments on the Draft EIS, the intent of which was to help blend the transmission line structures into the surrounding landscape better and to avoid an elk population. Variation S2-D2 separates from the Glass Hill Alternative and roughly parallels Variation S2-D1 across Graves Creek, Little Rock Creek, and Rock Creek but located 0.75 mile farther to the south.



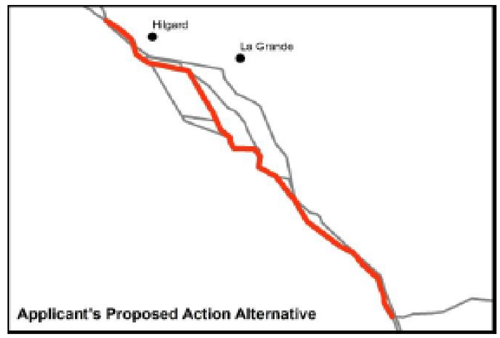
Geer 301/5

Exhibit 2

2.5.2.2 Segment 2—Blue Mountains

Segment 2 begins at west of La Grande in Union County and ends east of North Powder in Union County. The three alternative routes and six areas of local route variations in Segment 2 are shown on Map 2-7b.

APPLICANT'S PROPOSED ACTION ALTERNATIVE [LINKS 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 MILES]



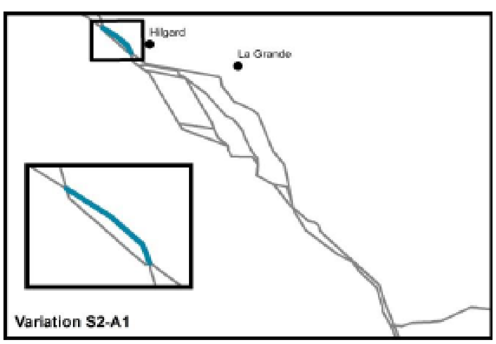
Applicant's Proposed Action Alternative

The Applicant's Proposed Action Alternative in Segment 2 was addressed in the Draft EIS and was the Agency Preferred Route in the Draft EIS. It was developed to the west of and to avoid the community of La Grande, Morgan Lake, and Ladd Marsh Wildlife Area. It continues from Segment 1 traveling to the southeast crossing Oregon Route 244, near Hilgard Junction State Park, and briefly heading east toward La Grande, for 3 miles, before again turning to the southeast. This alternative route is located 1 mile west of Morgan Lake and crosses Glass Hill and Ladd Creek as the route continues to the southeast for 15 miles before crossing Interstate 84 approximately 15 miles south of La Grande. Continuing to the southeast, the Applicant's Proposed Action Alternative crosses Powder River to the end of Segment 2 on Riverdale Hill.

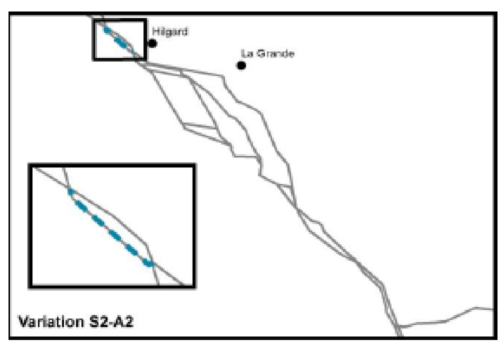
VARIATION S2 AREA A (WALLOWA-WHITMAN NATIONAL FOREST)

Variation S2-A1 (Links 2-1, 2-5; 2.8 miles) shares the same alignment as all of the alternatives in Segment 2, located 0.5 mile southeast of Interstate 84, paralleling the interstate for 3 miles to an area west of the Hilgard Junction State Park.

Variation S2-A2 (Links 2-3, 2-7; 2.9 miles) separates from the Segment 2 alternatives and parallels the existing 230-kV transmission line for 3 miles before rejoining the Segment 2 alternatives west of Hilgard Junction State Park.



Variation S2-A1



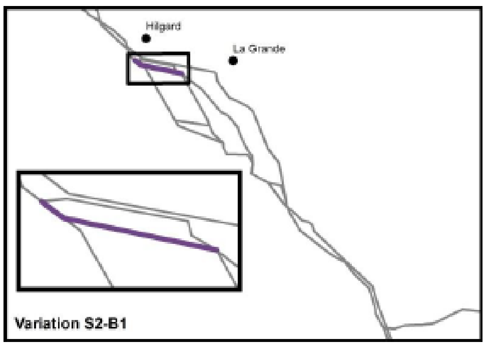
Variation S2-A2

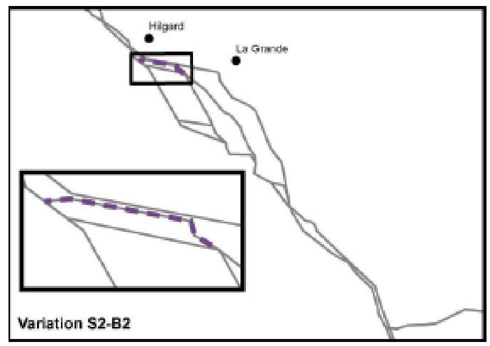
Exhibit 3

VARIATION S2 AREA B (WEST OF LA GRANDE)

Variation S2-B1 (Links 2-30, 2-35; 3.7 miles) shares the same alignment as the Applicant's Proposed Action Alternative route beginning south of Oregon Route 244 and traveling to the east for approximately 3 miles, located a 0.5 mile south of the existing 230-kV transmission line, crossing Rock Creek.

Variation S2-B2 (Link 2-25; 3.8 miles) separates from the Applicant's Proposed Action Alternative route south of Oregon Route 244 and more closely parallels the existing 230-kV transmission line for 3 miles before rejoining the Applicant's Proposed Action Alternative east of Rock Creek.

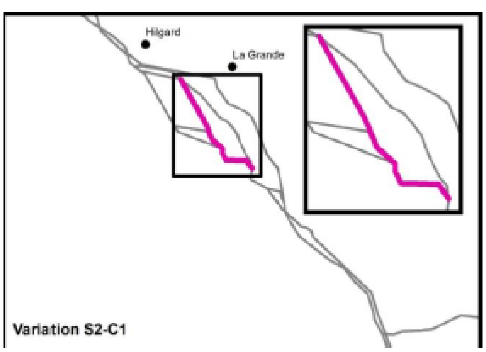


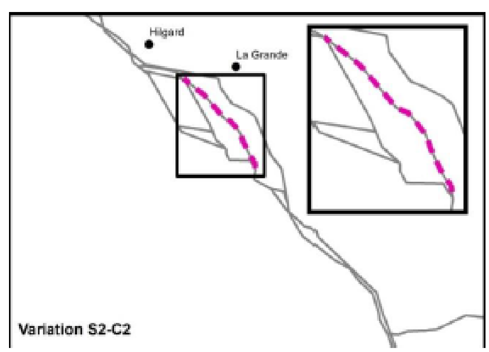


VARIATION S2 AREA C (ELK SONG RANCH AREA)

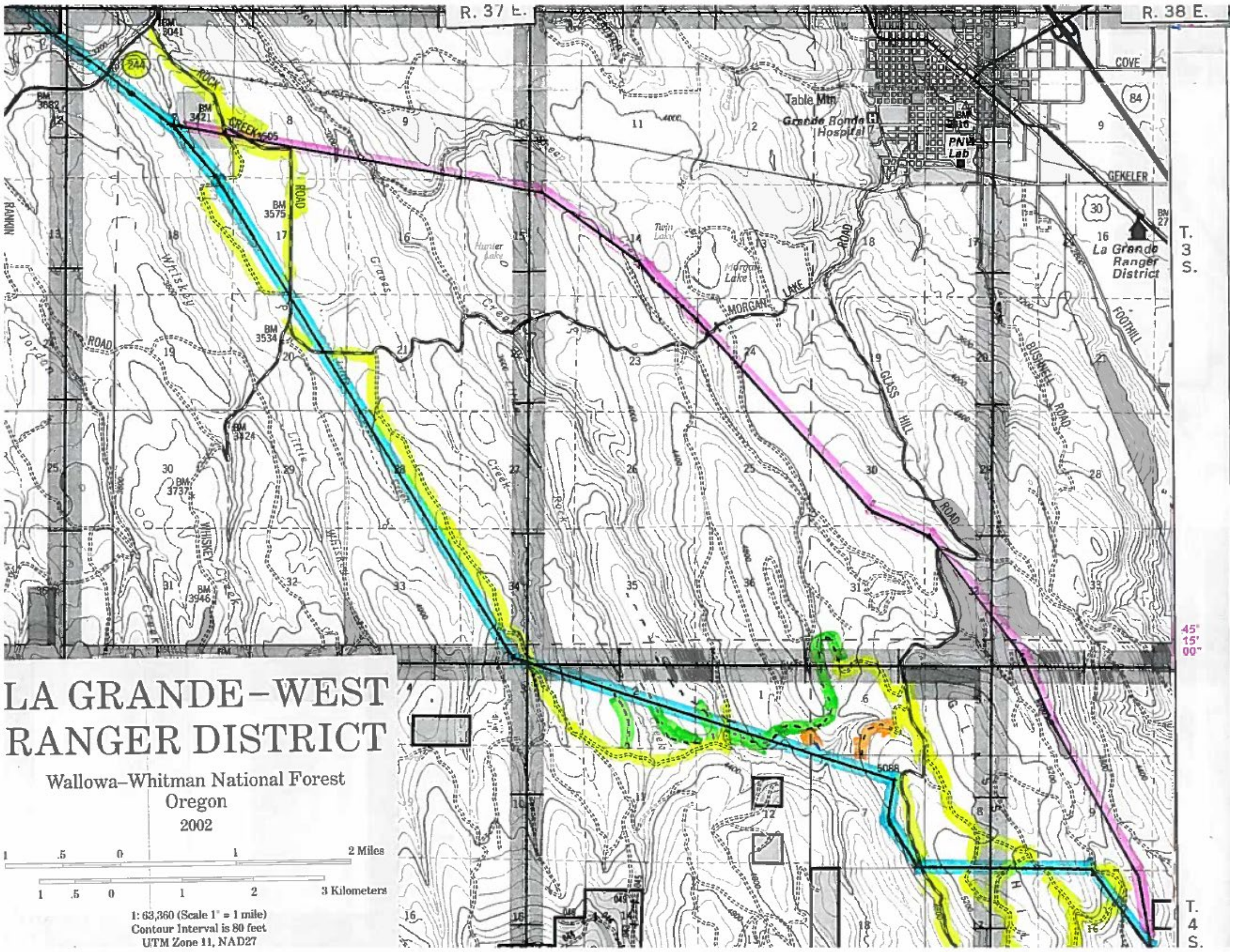
Variation S2-C1 (Links 2-45, 2-47, 2-50; 9.3 miles) shares the same alignment as the Applicant's Proposed Action Alternative beginning 1.5 miles west of Morgan Lake heading to the southeast between Rock Creek and Sheep Creek for 7 miles, before turning to the east across Glass Hill to an area 1.5 miles northwest of Ladd Creek.

Variation S2-C2 (Link 2-48; 8.8 miles) separates from the Applicant's Proposed Action Alternative and would be located 0.25 mile from Morgan Lake and roughly paralleling Variation S2-C1 between Mill Creek and Sheep Creek, staying east of Glass Hill, to an area 1.5 miles northwest of Ladd Creek.





MICHAEL MCALLISTER'S MAP



STAFF'S DATA REQUEST NO. 90.

Please refer to IPC's response to Staff DR 60 and the Opening testimony of Susan Greer of Whitetail Forest LLC, Exhibit Susan Greer 100, Greer/16, lines 19-21.

(a) Please explain in detail how each of the criteria considered by Idaho Power and identified in response to Staff DR 60 part b, supported its decision to pursue the Morgan Lake Alternative.

(b) Please explain in detail how the public feedback considered by Idaho Power and identified in response to Staff DR 60 part b, supported its decision to pursue the Morgan Lake Alternative.

(c) Please explain in detail the genesis of the Morgan Lake Alternative, including identification of each entity involved in development of the route and their respective role in the process and including a description of any public process to solicit feedback on the Morgan Lake Alternative.

(d) Does IPC agree with Susan Greer's testimony that one landowner developed and proposed the Morgan Lake Alternative? If not, please explain.

IDAHO POWER'S RESPONSE TO STAFF'S DATA REQUEST NO. 90.

As background and context for Idaho Power's Response to Staff's Data Request No. 90, Idaho Power first provides the following detail regarding the routes that were considered in the Union County area, noting that the BLM's "preferred" routes at each of these stages is highlighted in yellow. These routes are also shown in the figure below.

2010 - IPC's CAP: Glass Hill Route (proposed) and Glass Hill Alternative
See 2010 CAP Proposed Routes Map

2014 - BLM's DEIS: Glass Hill Route (proposed) and Glass Hill Alternative
See 2014 BLM DEIS Alternatives Map

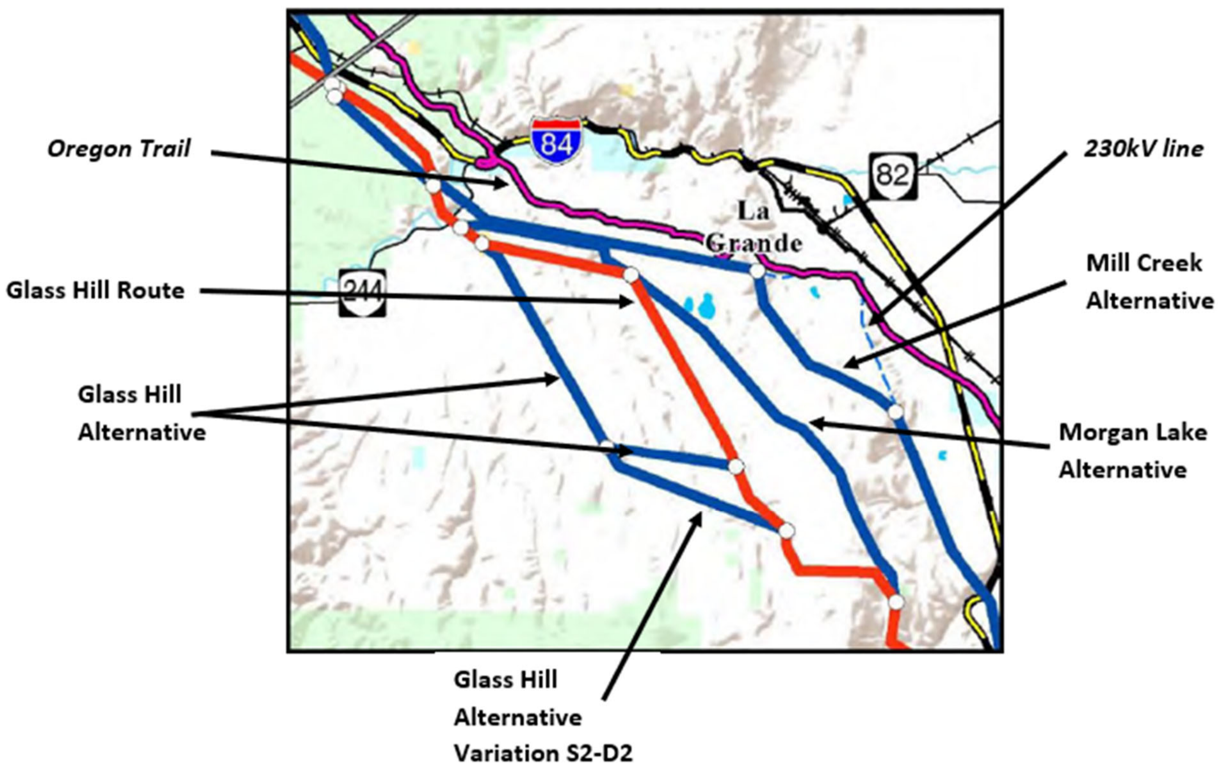
2016 - BLM's FEIS PAPA: Glass Hill Route, Glass Hill Alternative, Glass Hill Alternative with Variation S2-D2, Mill Creek Alternative and Morgan Lake Alternative
See 2016 BLM Prelim FEIS Alternatives Map

2016 - BLM's FEIS APA: Glass Hill Route, Glass Hill Alternative, Glass Hill Alternative with Variation S2-D2, Mill Creek Alternative and Morgan Lake Alternative
See 2016 BLM FEIS Alternatives Map

2017 - BLM's ROD APA: Glass Hill, Glass Hill Alternative, Glass Hill Alternative with Variation S2-D2, Mill Creek Alternative and Morgan Lake Alternative
See 2017 BLM FEIS Alternatives Map

2018 – IPC's ASC: Mill Creek Alternative (proposed) and Morgan Lake Alternative
See 2018 EFSC ASC Alternatives Map

Figure 1.


Oregon Trail
84
82
La Grande
230kV line
Glass Hill Route
244
Mill Creek Alternative
Glass Hill Alternative
Morgan Lake Alternative
Glass Hill Alternative Variation S2-D2

The BLM Preferred Alternative that was identified in the Final EIS is the Glass Hill Alternative and Variation S2-D2 in light blue color.

Figure 2.

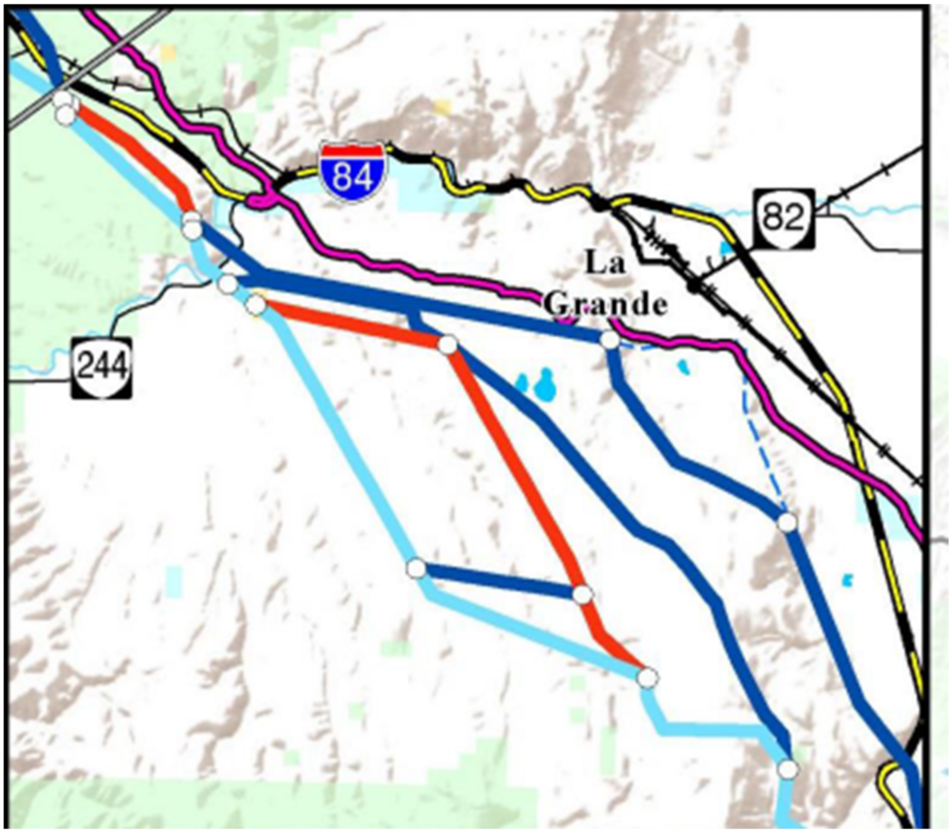
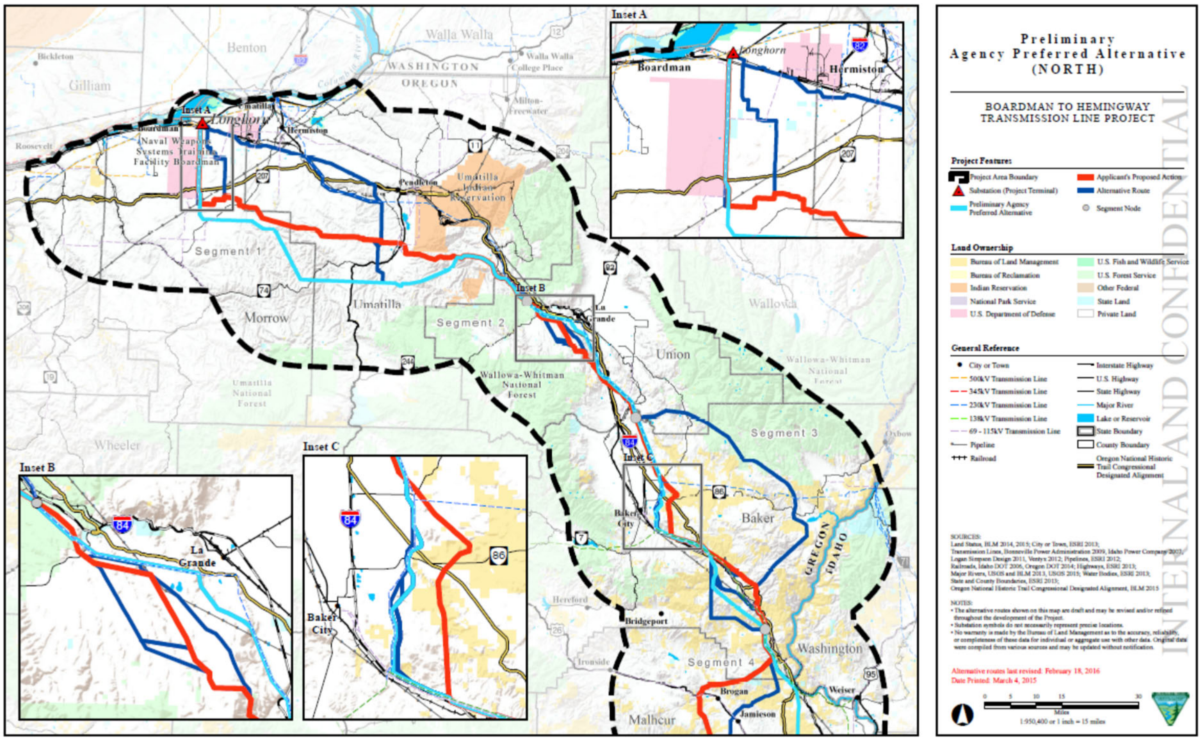


Figure 3.



(a) In response to Staff DR 60 part (b), Idaho Power explained:

> In the FEIS, several criteria were used to compare the various routes, including land use, agriculture, recreation, transportation, lands with wilderness characteristics, and potential congressional designations (see Table 2-23 provided in [DR 60] Attachment 3), as well as visual resources, cultural resources, Native American concerns, National Historic Trails, and socioeconomic and environmental justice concerns (see Table 2-24 provided in [DR 60] Attachment 3). In its decision to pursue the Morgan Lake Alternative, Idaho Power considered those criteria as well as public feedback.

Staff asks for additional detail regarding how these factors were considered in support of Idaho Power's decision to pursue the Morgan Lake Alternative. For context, when Idaho Power determined which routes would be included in its Application for Site Certificate at the Energy Facility Siting Council ("EFSC" or "Council"), it selected the Mill Creek Alternative and the Morgan Lake Alternative, and elected not to move forward with the Glass Hill Alternative. In the 2015 Supplemental Siting Study provided, as Attachment B-4 to Exhibit B of the ASC, Idaho Power explained that:

> The Glass Hill Alternative is not being carried forward from the pASC into the Amended pASC because the Proposed [Mill Creek] Route has fewer deep drainages and stream crossings than the Glass Hill Alternative and parallels an existing 230-kV transmission line with an existing developed road system (see

> Figure 3.1-2). Additionally, the Glass Hill Alternative has steep terrain and would require the development of a new road system.

From a construction and permitting perspective, Idaho Power understood that although there were tradeoffs among the three routes in terms of impacts, all three routes would likely be possible to construct and permittable in accordance with Oregon state law as determined by EFSC. Indeed, both the Morgan Lake Alternative and the Mill Creek Alternative were found to comply with EFSC standards and relevant Oregon law as detailed in the Final Order approving the site certificate for B2H. Because all three routes were likely capable of being permitted, the input from the public was the primary factor in which routes to move forward and which would not be studied further.

As Idaho Power explained in its Supplemental Siting Study, included for reference as Attachment 1, in Union County "routing has been very difficult due to competing landowner opinions, environmental resource issues, visual impact concerns, and difficult construction conditions."[1] Additionally, the Supplemental Siting Study explains:

> The BLM Scoping Process in the fall of 2010 generated many stakeholder comments on the proposed and alternative routes in the Glass Hill area. Through the scoping process it became clear that there were many contradictory views regarding the location of the Proposed Route. IPC set up community meetings subsequent to the 2010 Scoping Process to continue to work with landowners in this area.[2]

As Idaho Power detailed in its Response to Staff's Data Request No. 60 part (c), at the time that Idaho Power had to determine which routes to continue to advance in the EFSC review process, the consideration of public feedback—including from affected landowners, local government entities, and the Confederated Tribes of the Umatilla Indian Reservation ("CTUIR")— were the primary drivers for the selection of the Mill Creek alternative and the Morgan Lake Alternative over the Glass Hill Alternative. Importantly, in 2016 Idaho Power understood that both landowners and Union County preferred the Mill Creek Route which would be collocated with an existing 230-kV transmission line.[3] Additionally, the Mill Creek Route was selected by the BLM as the Preliminary Agency Preferred Route in 2016. The BLM subsequently reversed course and identified the Glass Hill Alternative with Variation S2-D2, which was somewhat unexpected as detailed in comment letters provided by the Glass Hill Coalition, included for reference as Attachment 2.

For convenience, the explanation provided in Idaho Power's Response to Staff's Data Request No. 60 part (c) is set forth again below.

> Idaho Power decided not to pursue the Glass Hill Alternative based on the strong opposition of the Glass Hill Coalition, the CTUIR's preference for the "Proposed Route," and BLM's indication in the Draft EIS that the "Proposed Route" was preferable to the Glass Hill Alternative. Instead, Idaho Power chose to pursue the Morgan Lake Alternative and the Mill Creek Alternative. The Company pursued the Morgan Lake Alternative because it was similar to the "Proposed Route" that BLM had indicated a preference for, while minimizing

[1] Attachment 1 at 1.
[2] Attachment 1 at 3.
[3] Attachment 2.

impacts to one of the affected landowners. Idaho Power pursued the Mill Creek Alternative based on the County's request for a route that followed the existing transmission line. Idaho Power ultimately chose to pursue the Morgan Lake Alternative in its Petition for a Certificate of Public Convenience and Necessity based on feedback received from the local governmental entities, the City of La Grande and Union County, which stated a preference for the Morgan Lake Alternative over the Mill Creek Alternative due to the latter's proximity to the city.

(b) Please explain in detail how the public feedback considered by Idaho Power and identified in response to Staff DR 60 part b, supported its decision to pursue the Morgan Lake Alternative.

As Idaho Power explained in response to (a), above, and in the Company's Response to Staff's Data Request No. 60, there was substantial public opposition to the Glass Hill Alternative. In its Response, Idaho Power provided a number of attachments detailing input from the local government entities regarding the Union County alternatives, as well as input from the CTUIR. For additional context, Idaho Power is also providing as Attachment 3 a comment letter from an organized landowner opposition group with more than 100 members, the Glass Hill Coalition, that was provided as part of the DEIS detailing its concerns. The organized opposition to the Glass Hill Alternative led Idaho Power to consider developing an alternative route, which ultimately became the Morgan Lake Alternative. The Mill Creek Alternative was also introduced as another route alternative based on input during the BLM public process Although local government entities expressed a preference for the Mill Creek Alternative, they subsequently indicated a preference for the Morgan Lake Alternative over the Mill Creek Alternative. Furthermore, the CTUIR's preference was the proposed route (which became the Morgan Lake Alternative through routing refinements).[4] Idaho Power also discussed the public participation information and routing history in Idaho Power's 2021 IRP Appendix D in Docket LC 78. See Attachment 4.

(c) Please explain in detail the genesis of the Morgan Lake Alternative, including identification of each entity involved in development of the route and their respective role in the process and including a description of any public process to solicit feedback on the Morgan Lake Alternative.

Idaho Power, with public input, identified two routes through the Community Advisory Process in 2009. These two routes were, at the time, referred to as the Glass Hill Route ("Proposed Route") and the Glass Hill Alternative. There is an existing 230-kV line running into the City of La Grande, but the input at the time was to keep the new line out of the viewshed of the city. The maps below show early depictions of the two alternatives resulting from the Community Advisory Process. These two variations were submitted into the National Environmental Policy Act ("NEPA") process for evaluation of impacts and public comment.

[4] DR 60, Attachment 7 ("The proposed route should be selected rather than the Glass Hill Alternative. Both alternatives will have impacts, but the proposed route introduces fewer new effects.").

Figure 4

Appendix D

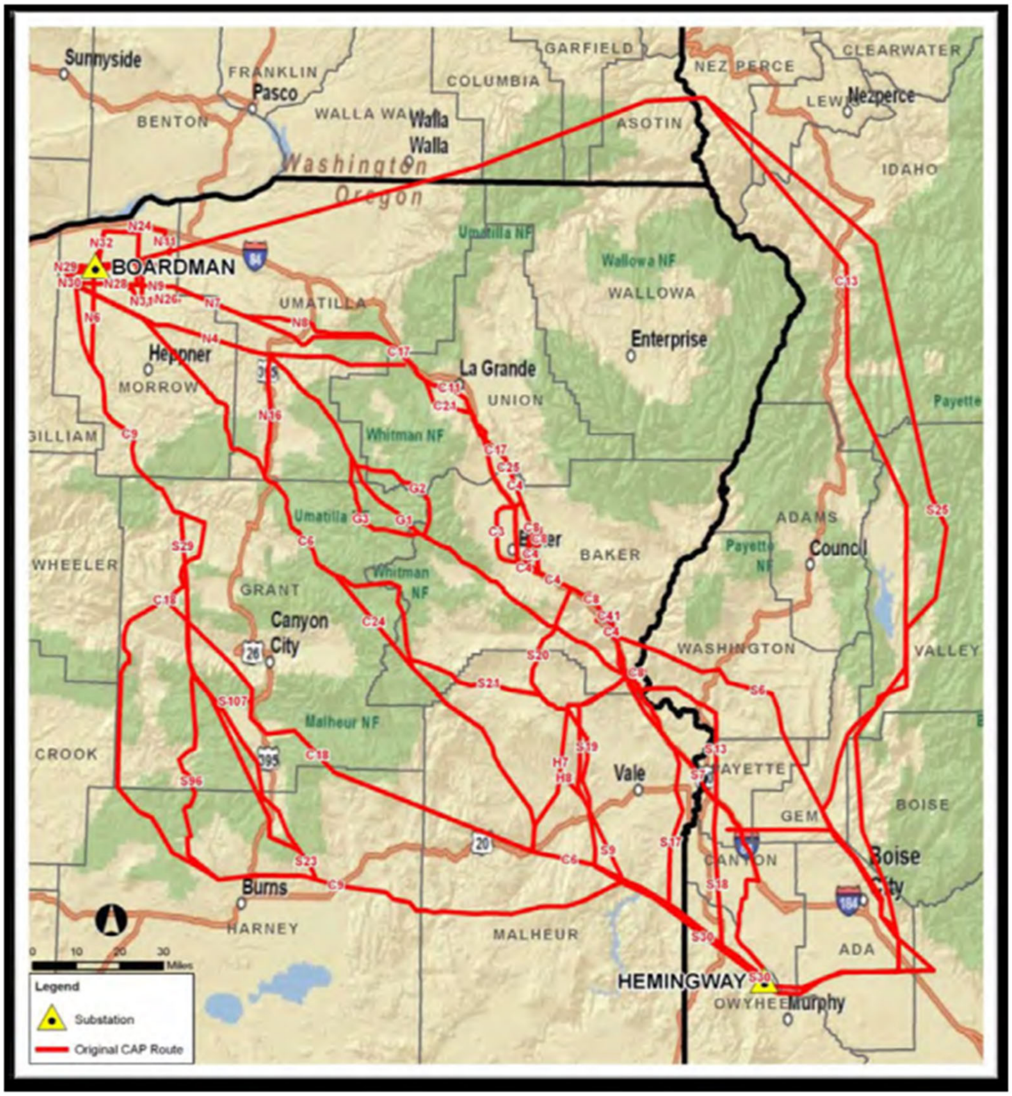


Figure D-1. Routes developed by the Community Advisory Process teams (2009 timeframe)

Figure 5

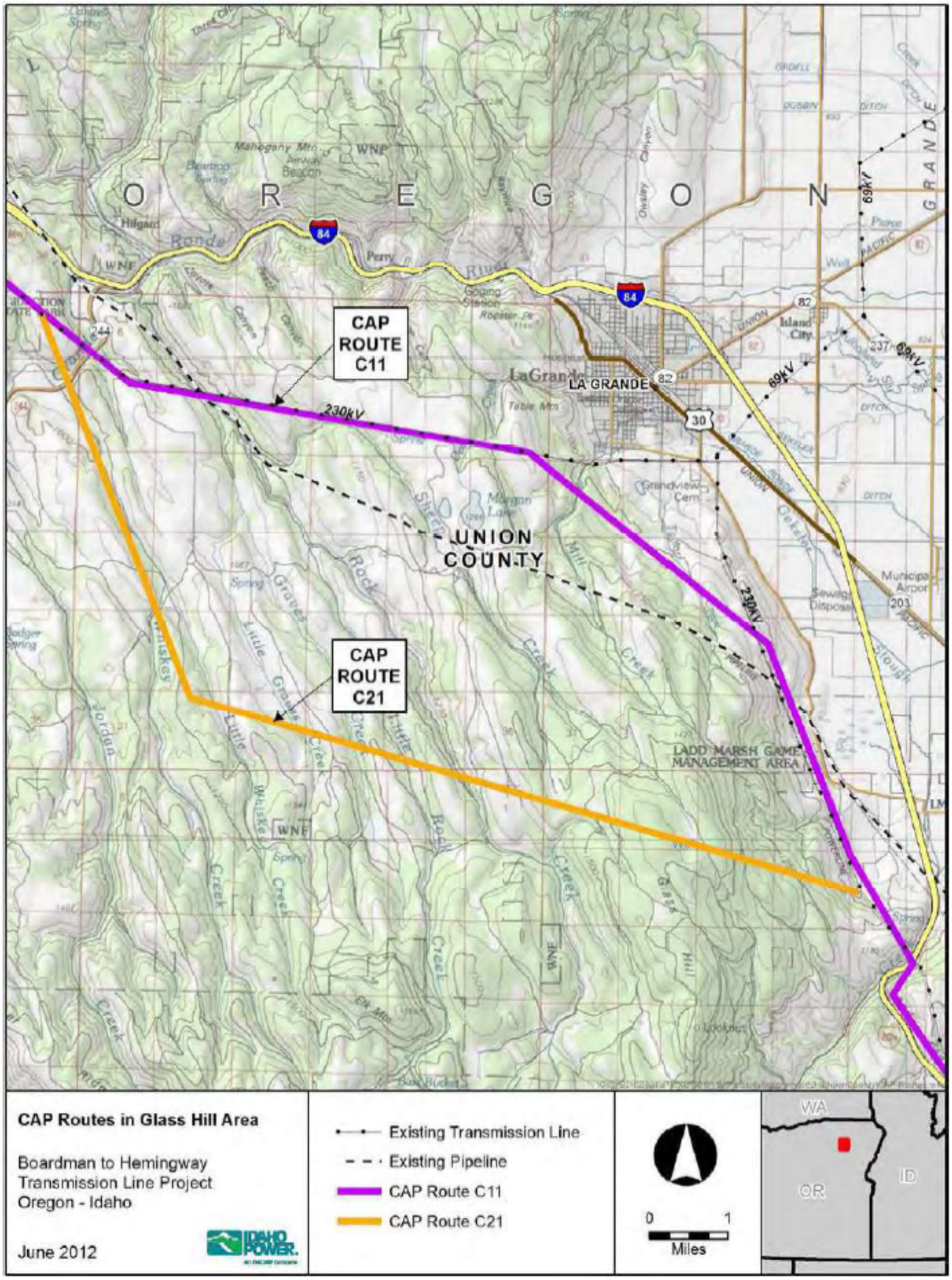


Figure 3.3-1. CAP Routes in Glass Hill Area

An opposition group was formed, the Glass Hill Coalition in opposition of the Glass Hill Alternative, which is the farthest west route variation. In light of the opposition to the Glass Hill Alternative from the Glass Hill Coalition, Idaho Power identified the Glass Hill Route as the Proposed Route in the NEPA process. The two routes below were identified in the BLM's draft EIS.

As part of the NEPA process, and in attempt to minimize impacts of the Glass Hill Route / Proposed Route at that time, the Morgan Lake Alternative was developed in coordination with a landowner as an alternative to the "proposed route." In particular, the Morgan Lake Alternative considered the landowner's request to site the alternative on his parcel in a way that would avoid bisecting it. In other words, Idaho Power was working with the landowner to move the corridor from one location on his property to another location on his property to minimize impacts. During the NEPA process, a fourth route variation was developed and evaluated—the Mill Creek Alternative–at the recommendation/request of Union County's B2H Advisory Committee. In January 2016, Union County's B2H Advisory Committee stated B2H should follow the existing 230-kV line.[5] Idaho Power worked with Union County and BLM to create the Mill Creek Alternative. In March 2016, Mill Creek alternative became the Preliminary Agency Preferred Alternative. As shown in the mapping associated with BLM's Preliminary Agency Preferred Alternatives (Figures 2 and 3 above), there were four alternative routes and one route variation being considered. At the time that the BLM issued its Preliminary Final EIS, the Mill Creek Alternative was identified as BLM's Preliminarily Preferred Route.

The Union County B2H Advisory Council and the BLM NEPA process both provided opportunities for input into the preferred routing and minimization of impacts.

(d) Does IPC agree with Susan Geer's testimony that one landowner developed and proposed the Morgan Lake Alternative? If not, please explain.

No. Idaho Power agrees that it worked primarily with one landowner of a large parcel (approximately 7,500 acres), to develop the Morgan Lake Alternative. However, it is important to note two important pieces of context. First, the impacted landowner and others formed the Glass Hill Coalition to oppose the Glass Hill Alternative, and thus it was not a single landowner driving the need to develop an alternative, but rather was a coordinated group of over 100 landowners. Second, the coordination with the impacted landowner concerned the location of the B2H project on that landowners' property, and did not involve moving the project entirely off his property and onto his neighbors' property. Idaho Power works with landowners to attempt to minimize impacts where possible, and the coordination with this particular landowner is consistent with Idaho Power's practices.

[5] Attachment 2 at page 3.

Alternative centerline. Appendix C, Figures C-1 and C-2 along with Table C-1 describe the changes between these alignments in Morrow County.

Between the Grassland Substation and approximately MP 8.0, the Proposed Route has been shifted north to follow the south side of the existing Boardman to Slatt 500-kV transmission line (Appendix C, Figure C-1, ID 1). This adjustment avoids crossing the northern side of The Nature Conservancy Preserve (Boardman Conservation Area) where WAGS colonies are present and minimizes impacts to pivot irrigation in the area. Two other locations along the Proposed Route, MPs 12–18 and MPs 20–23, were adjusted per landowner discussions with IPC (Appendix C, Figure C-1, IDs 4 and 5). The Proposed Route centerline was also shifted north between MPs 33.5 and 39 due to a landowner request to avoid proposed wind turbine sites (Appendix C, Figure C-1, ID 6). ID 11 on Figure C-2 in Appendix C was the result of an engineering assessment to improve constructability.

3.2 Umatilla County, Oregon

The Proposed Route in Umatilla County, Oregon (CL1-CL2; CL3-UM1-CL4) is approximately 49.5 miles long and crosses only private land (see Appendix D, Figure D-2). IPC has continued to work with landownersto develop the current alignment across Umatilla County and, as a result, slight centerline adjustments have been made since the 2010 Siting Study. Additionally, approximately 20 miles of the Boardman North Alternative was located within Umatilla County. As discussed above in Section 3.1.2, development of the Longhorn Alternative and Substation eliminated the need for a northern route to the Grassland Substation. There has been no need to develop any other alternatives within Umatilla County.

3.2.1 Proposed Route Adjustments

Appendix C, Figures C-1 to C-3 compare the May 2012 Proposed Route with the 2010 Proposed Route in Umatilla County. ID 7 on Figure C-1 in Appendix C is a centerline adjustment made to better follow parcel lines and improve constructability. Between Proposed Route MP 51 and MP 56.5 (ID12), the centerline was shifted to stay along the north side of Slusher Canyon. Three other realignments along the Proposed Route in Umatilla County (IDs 13, 14, and 15) were made due to an engineering assessment to improve constructability, while a fourth adjustment, ID 16, was made based on landowner discussions with IPC. Figure C-3 in Appendix C shows the final two realignments along the Proposed Route in Umatilla County. These two adjustments, IDs 17 and 18, were made to improve route constructability and minimize additional canyon crossings.

3.3 Union County, Oregon

The Timber Canyon Alternative is located in both Union and Baker counties. Since its development is most closely associated with resouces in Baker County, it is discussed below in Section 3.4.1, NHOTIC Alternatives.

3.3.1 Glass Hill Alternatives

In the Glass Hill area, routing has been very difficult due to competing landowner opinions, environmental resource issues, visual impact concerns, and difficult construction conditions. Initially, two routes were developed in the Glass Hill area by stakeholders during the CAP routing sessions. These CAP alternatives are designated C11 and C21 in Figure 3.3-1.

After the CAP routing sessions the IPC team reviewed each route to identify potential issues that could significantly impact the ability to permit or construct the Proposed Route. During this review, CAP Route C11 appeared to have a critical permitting issue where it crossed the Ladd Marsh Wildlife Management Area (WMA). Under ODOE Energy Facility Siting Council (EFSC) regulations, state wildlife

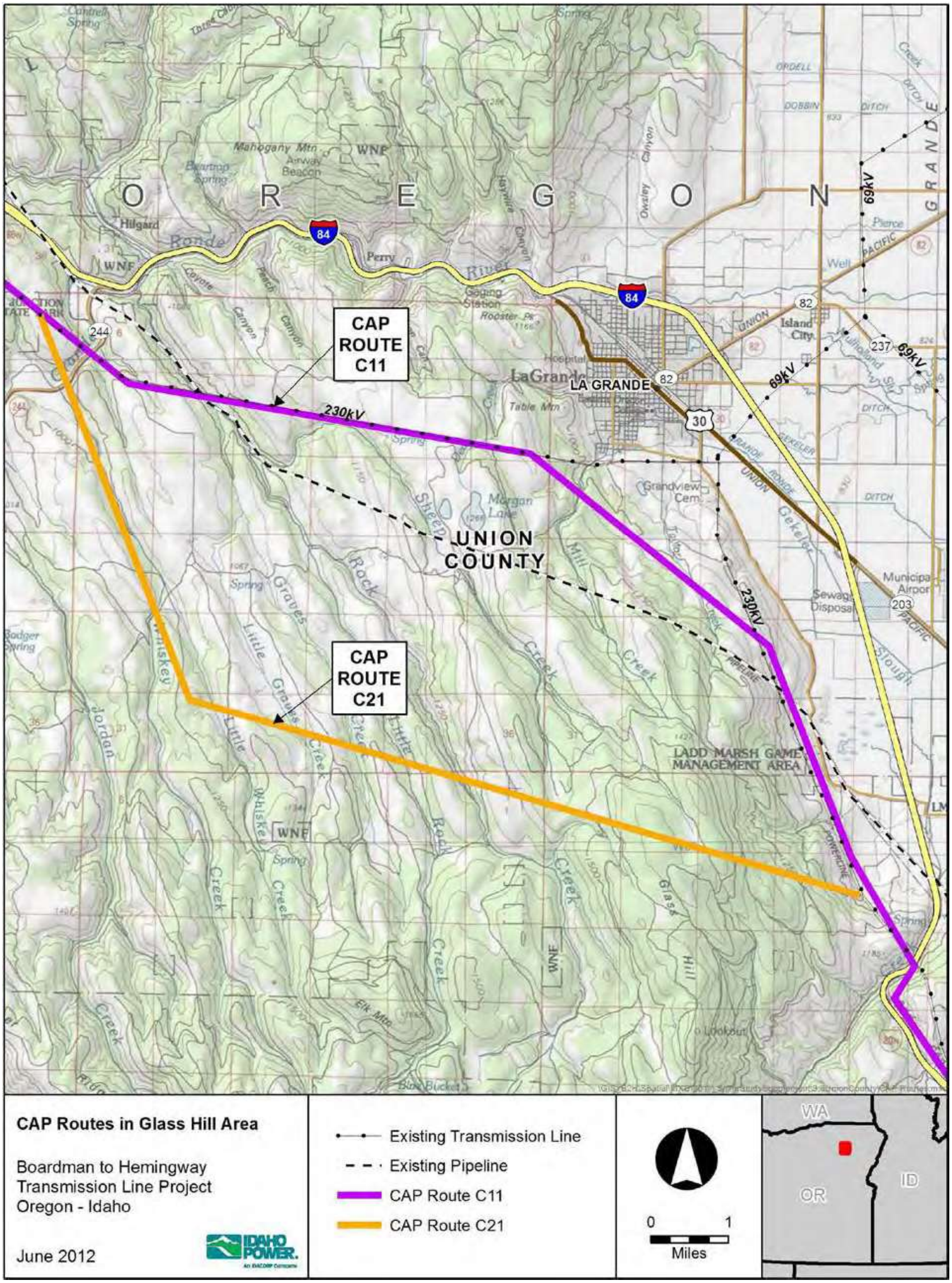


Figure 3.3-1. CAP Routes in Glass Hill Area

management areas are designated as Protected Areas, which are exclusion areas if other options are feasible. Coupled with this resource issue was the fact that Union County's main concern was visibility of the transmission line route from La Grande. With CAP Route C21 located over 6 miles from La Grande at its closest point, and the fact that it avoided Ladd Marsh WMA, it was considered the more reasonable route in the Glass Hill vicinity. CAP Route C21 ultimately evolved into the Proposed Route as shown in the 2010 Siting Study.

Following the CAP, the Glass Hill Alternative (see Figure 3.3-2) was developed by IPC in April 2010 to avoid the Eastern Oregon University Rebarrow Research Forest at the northern end of Glass Hill. In addition, the Glass Hill Alternative was refined by the IPC engineering team to minimize construction difficulty through the very severe topography found throughout this area.

The BLM Scoping Process in the fall of 2010 generated many stakeholder comments on the proposed and alternative routes in the Glass Hill area. Through the scoping process it became clear that there were many contradictory views regarding the location of the Proposed Route. IPC set up community meetings subsequent to the 2010 Scoping Process to continue to work with landowners in this area.

Figure 3.3-3 shows alternatives submitted through the Scoping Process in blue, and those alternatives developed through citizen correspondence and discussions with IPC in orange. The southern portion of the Glass Hill Alternative, as proposed in the 2010 Siting Study (MP 6-16 on Figure 3.3-3), was eliminated due to environmental resource concerns identified by ODFW during the 2010 scoping process, landowner opposition and environmental habitat concerns. Additional routing suggestions from landowners to evaluate routes south of the 2010 Glass Hill Alternative were assessed by IPC and were determined not to have fewer environmental impacts than the 2010 Glass Hill Alternative and actually crossed more severe terrain.

Several 2010 scoping comment letters asked that alternatives follow the existing utility easements in the Glass Hill area. As previously discussed, analysis of a route parallel to the existing 230-kV transmission line took place during the CAP. At the request of landowners, IPC revisited this analysis and consulted with ODFW. ODFW reported that if an upland route out of the wetland habitat could be developed the agency would consider such a route (ODFW 2011). However IPC again came to the same conclusion that a route in this vicinity would have more potential impact than either the Proposed Route or Glass Hill Alternative due to steep upland terrain and proximity to homes and cabins on the ridge west of La Grande and therefore should not be carried forward for further asssessment.

An alternative following the existing natural gas pipeline in this vicinity also would cross the Ladd Marsh Wildlife Management Area, a Protected Area under EFSC guidelines. IPC put the permitting difficulty of the route aside and conducted an engineering analysis. This analysis found the Proposed Route more favorable than the alternative following the pipeline from an engineering and constructability standpoint.

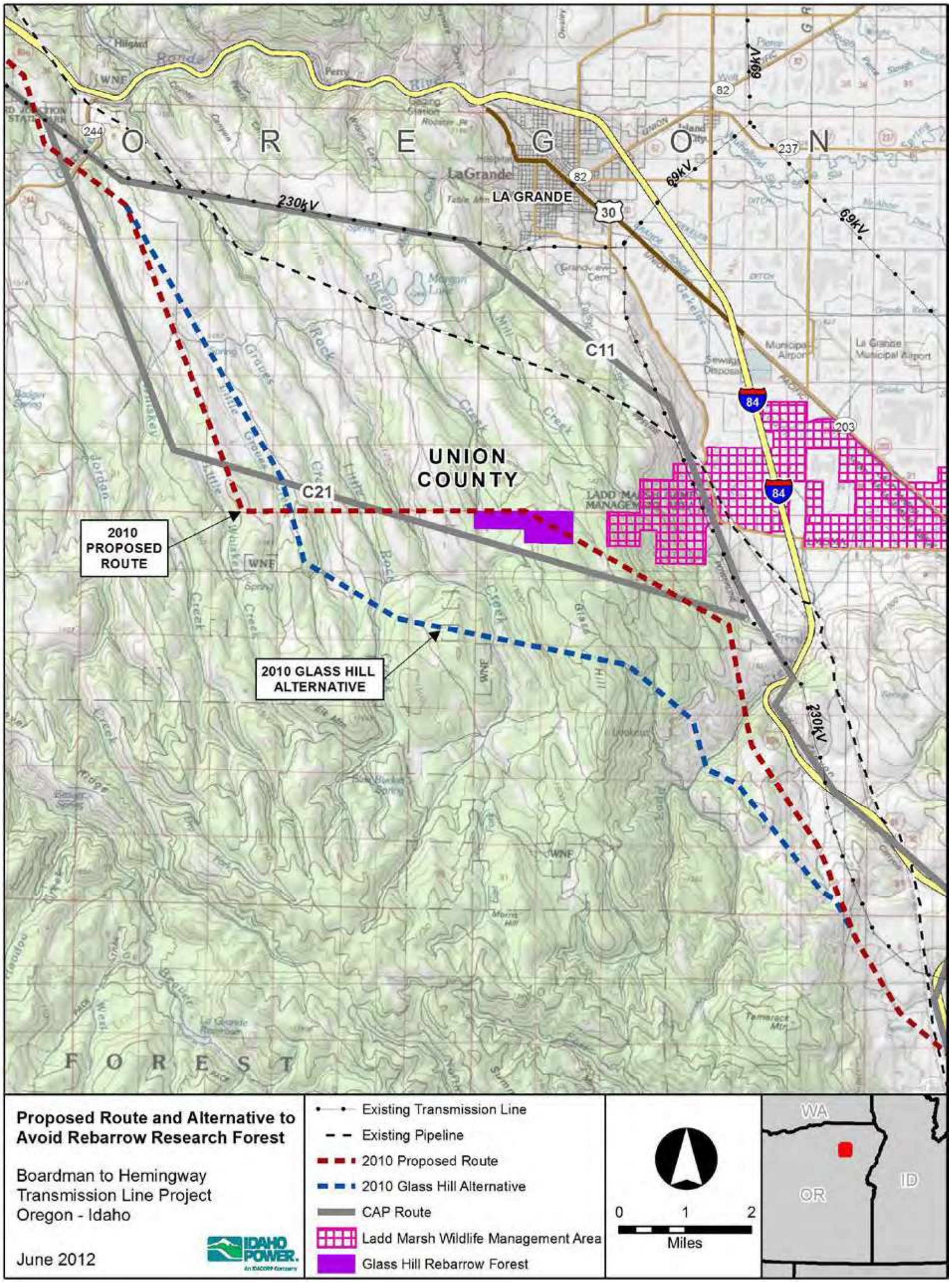


Figure 3.3-2. Proposed Route and Alternative to Avoid Rebarrow Research Forest

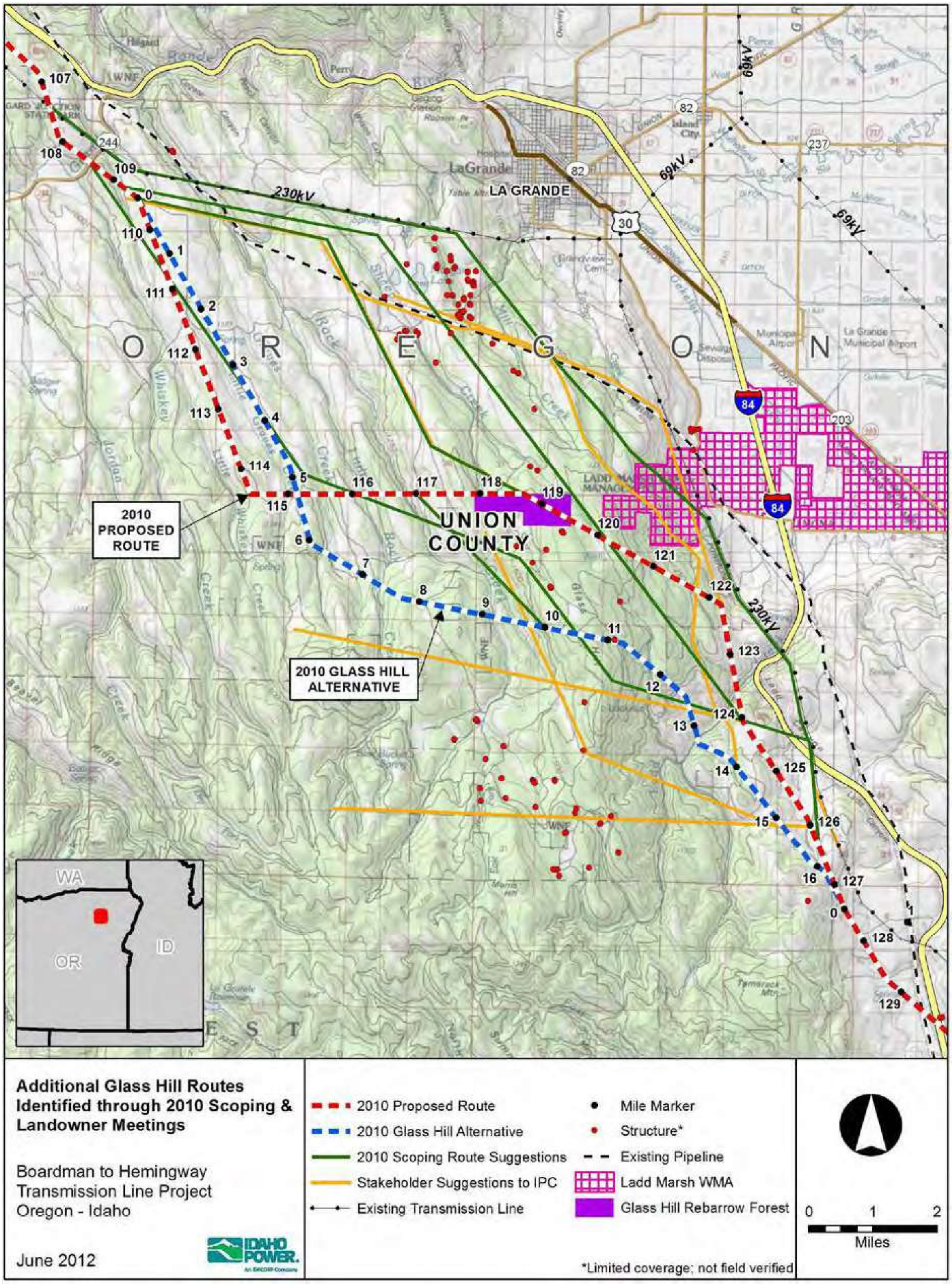


Figure 3.3-3. Additional Glass Hill Routes Identified through 2010 Scoping and Citizen Correspondence

Other alternatives proposed in this vicinity as a result of the 2010 scoping process generally follow a northwest to southeast alignment near the location of the proposed and alternative routes. IPC reviewed the stakeholder concerns and scoping alternatives and attempted to strike a stakeholder, environmental permitting, and constructability balance. During review of the many alternatives, IPC decided to relocate the 2010 Proposed Route approximately 3 miles to the east to an alignment suggested during the scoping process. This decision was made after an engineering review of the area identified this ridgeline, between Rock Creek and Sheep Creek, as providing the best access and terrian for construction and maintainance of a transmission line. IPC decided to keep a segment of the 2010 Proposed Route, adjusted slightly for engineering purposes, as the new (2011) Glass Hill Alterantive (see Figure 3.3-4).

While IPC has identified a Proposed Route (UN1-UN3-UN12-UN7) and alternative route (UN1-UN2-UN3) in the Glass Hill area, landowner concerns have not abated. IPC understands this and plans to continue to work with local residents to improve the alignment of the proposed and alternative routes. For a comparison of the resources crossed by the Glass Hill Alternative relative to the comparable section of the Proposed Route, see Appendix E, Table E-2.

3.3.2 Elimination of Blue Mountain Forest State Park Alternative

IPC's continued analysis of the Proposed Route in late 2010 revealed a crossing of an EFSC-designated Protected Area, the Blue Mountain Forest State Scenic Corridor. This led to the development of the Blue Mountain Forest State Park Alternative (UN4-UN5-UN6), which avoided the State Scenic Corridor (see Figure 3.3-5).

The Blue Mountain Forest State Park Alternative is 3.2 miles long and is located within the Wallowa-Whitman National Forest (NF) utility corridor. The alternative departs from the Proposed Route at MP 101.1 and proceeds easterly, crossing Interstate 84 (I-84) at MP 0.9 before angling southeasterly at MP 1.0 to pass along the eastern edge of a segment of the Blue Moutain Forest State Scenic Corridor. At approximately MP 1.7 the route angles farther to the south, crosses back over I-84, and rejoins the Proposed Route at MP 104.1.

A subsequent engineering evaluation determined it was possible to span the Blue Mountain Forest State Scenic Corridor, thereby minimizing construction and maintenance impacts by eliminating the need for access roads and tower pads on park lands. The potential impacts of the Blue Mountain Forest State Park Alternative were then discussed with ODOE and the Oregon Deparment of Parks and Recreation. Ultimately, it was determined that the alternative would likely result in more impacts than the Proposed Route. For this reason, the Blue Mountain Forest State Park alternative was eliminated from further study.

3.3.3 Elimination of Clover Creek Valley Alternative

IPC considered the Clover Creek Valley Alternative (UN7-UN8-UN9) to avoid crossing the northern end of the Clover Creek Valley, which is actively farmed and zoned as EFU. This alternative, while avoiding the farmland by crossing to the north of the valley, would require two crossings of an existing 230-kV line within a stretch of 2.7 miles (Figure 3.3-6). This alternative is described in detail in the 2010 Siting Study, Section 4.2.3.

The Clover Creek Valley Alternative was presented to the public during the fall 2010 scoping process and at various IPC community meetings . Little concern over the location of the Proposed Route in this area or support for the alternative was received and IPC decided to eliminate the alternative due to the need for two crossings of the existing 230-kV line.

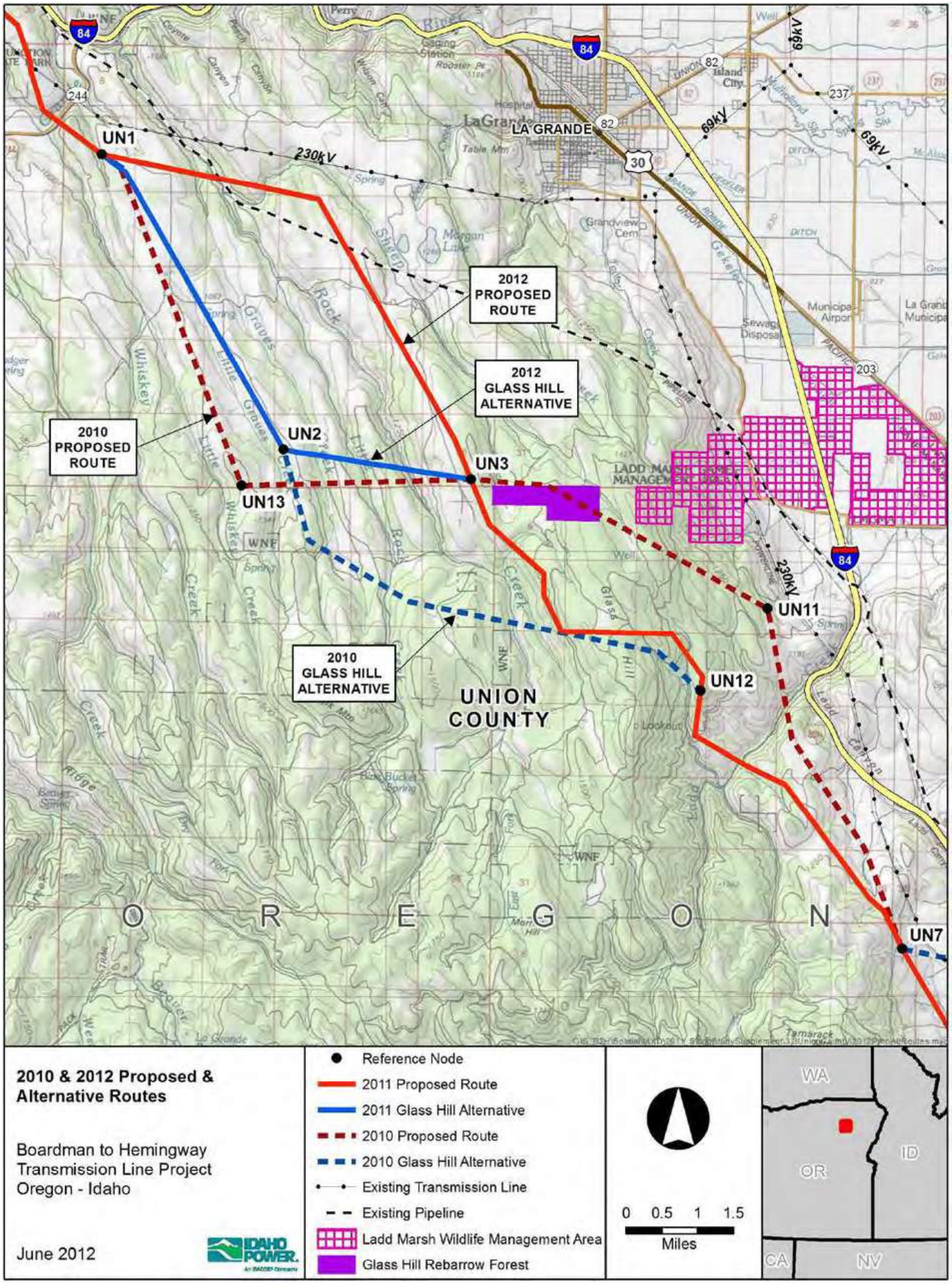


Figure 3.3-4. 2012 Glass Hill Proposed and Alternative Routes

December 12, 2016

US Senator Ron Wyden	US Senator Jeff Merkley	US Representative Greg Walden	Director Neil Kornze
105 Fir St, Ste 201	310 SE Second St, Ste 105	1211 Washington Ave	Bureau of Land Management
La Grande, OR 97850	Pendleton, OR 97801	La Grande, OR 97850	1849 C St NW, Room 5665
			Washington, DC 20240

RE: Help Identifying the Source of Intervention into the Boardman to Hemmingway (B2H) Final Environmental Impact Statement associated with the Transmission Line Route Selection South of La Grande, Oregon

Dear All,

The Glass Hill Coalition was astounded when the BLM issued the Final EIS for the B2H line and the 'Agency Preferred Alternative Route' selected for the transmission line south of La Grande was shown to be across the predominately forested and undeveloped land over and to the west of Glass Hill and did not follow the already established transmission route occupied by the existing 230 kv transmission line that goes around Glass Hill to the north and east. Significant work had been done by the BLM, Idaho Power and Union County to identifying the least impactful route through this area and the consensus was that the new line should follow the existing 230 kv line in this area as much as possible, being routed away from the 230 kv line directly south of La Grande to avoid existing structures and minimize impacts to residents south of La Grande, see attached letter from the Union County Board of Commissioners dated January 16, 2016.

As a result of extensive input and the in-depth EIS evaluation process the originally published BLM 'Preliminary Environmentally Preferred Alternative Route' which followed Idaho Power's 'Applicants Proposed Action' shown on attached BLM map dated December 14, 2015 was changed to the route following the existing 230 line and published by the BLM as the 'Preliminary Agency Preferred Alternative' as shown on the attached BLM map dated March 15, 2016. But before the Final EIS was issued we were told that someone in Washington, DC intervened in the process and the route was changed to the route shown on the attached BLM map dated 9/30/2016.

A member of the Coalition had been in close contact with the BLM lead on this project, Don Gonzales, during the EIS development process and met with him and his supervisor Ron Dunton on Glass Hill this last fall to review the various routes across and around Glass Hill first hand. After their visit he was told by them that the least impactful route would be the route following the 230 line and thus this would be the recommended route presented in the Final EIS. After the Final EIS was issued, he contacted Don Gonzalez and asked what had changed the line routing and Don stated that he could not comment on the route location change as it had been changed in Washington, DC, and when asked if there had been addition issues identified that would environmentally of historically justify the change in the route he indicated he was not aware of any.

The only explanation we have been able to determine is that this was done to appease land owners who reside near Morgan Lake west of La Grande (see attached BLM maps for this location) under the primary auspice that it would have negative impacts on the 'generally accepted' Oregon Trail route to the west of La Grande. The Oregon Trail route through this area is no longer discernable and a detailed review of the area on Google and Bing Maps (see attached Oregon Trail Route Review information) shows there are no visual indications of any 'intact' wagon ruts in this area. This area is also all on private property so even if the trail were present in some form in this area the public does not have access to any portions of the route. A review of all the comments from the groups and individuals that provided comment associated with the Oregon Trail route found that this portion of the trail was not mentioned, yet the section of the trail to the north of Hilgard Park and to the south of Ladd Canyon were both mentioned, yet the proposed transmission line route was not moved in these locations to protect the EIS stated 'high potential' portions of the trail. Given the numerous locations in which the proposed B2H route crosses and/or runs along the 'generally accepted' Oregon Trail in areas where some of the trail may still be discernable makes moving the line route in this area essentially insignificant.

The route that was ultimately selected was a route proposed by one of the land owners near Morgan Lake who contended that the selected route had lower impacts than the original route proposed by Idaho Power, but from the EIS evaluation both of these routes were found to have significantly higher impacts than following the existing 230 kv line route. We heard that this group of land owners near Morgan Lake had numerous interactions with various public officials and the appearance is that this is what instigated the change in the BLM selected route. One such interaction is documented in the attached letter from Ron Wyden to Neil Kornze dated June 15, 2016, which has the appearance of being the root of this route change. If this is not the case we would expect and request that one of you identify in detail why the route was changed and provide the Coalition with this information so we can properly address the source of the change. The Final EIS does not provide any new information that shows this reversal was due to actual environmental or historic impacts; and thus this reversal appears to be solely political.

In order to help you understand the Coalitions concerns I have enclosed copies of the primary comments and information presented to Idaho Power and the BLM on the line routing concerns over and around Glass Hill. Please note the Glass Hill Coalition Supporters List, attached to our input to the Draft EIS dated March 16, 2015 and attached to this letter. This list is signed by the majority of landowners impacted by the route across Glass Hill, including Mike McAllister (3rd sheet, line 15) who changed his mind for some reason and who's proposed route was the route ultimately selected and was also a route that was not studied in any detail. The Coalition members will be waiting anxiously to learn more about the Washington, DC interaction and whether you are able to uncover who interjected themselves into the process and why they were allowed to circumvent the congressionally established EIS/HIS process.

If you have any questions about any of the information provided please contact me.

Sincerely,

Dan Turley
855 East Quince Ave
Hermiston, Oregon 97838
541-303-3037
Representing the Glass Hill Coalition

Copy w/o Attachments:

Union County Board of Commissioners
Idaho Power Company
President Elect Donald Trump, The Trump Organization, 725 Fifth Ave, New York, NY 10022

Attachments:

Union County Board of Commissioners letter to BLM on Route Location dated January 21, 2016 (2 Pages)
Letter from Ron Wyden to Neil Kornze dated June 15, 2016 (1 Page)
BLM Map, 'Alternative Routes (North)', Date Printed: December 16, 2015 (1 Page)
BLM Map, 'Preliminary Agency Preferred Alternative (North)', Date Printed: March 15, 2016 (1 Page)
BLM Map, 'Applicant's Proposed Action and Agency Preferred Alternative Routes (Northern Area)', Final EIS: Draft 9/30/2016 (1 Page)
Oregon Trail Route Review Map and Images North of Morgan Lake & Existing 230 kv Line (8 Pages)
BLM letter dated January 3, 2016 contesting the October 16, 2015 Agency Preferred Alternative Route
-Includes letter dated March 5, 2012 concerning information and input from Oregon EFSC (11 Pages)
Glass Hill Coalition input to the DEIS dated March 16, 2015 (24 Pages)

UNION COUNTY
BOARD OF COMMISSIONERS

Steve McClure, Commissioner
Mark D. Davidson, Commissioner
Jack Howard, Commissioner

1106 K Avenue La Grande, OR 97850 PHONE (541)963-1001 FAX (541)963-1079 TTY 1-800-735-1232

January 21, 2016

Don Gonzalez
Bureau of Land Management
Boardman to Hemingway Project

Dear Mr. Gonzalez,

The Union County Board of Commissioners met on Wednesday, January 20, 2016 to consider how best to respond to the opportunity to comment on what you have seen described elsewhere as "the best worst" or the "least undesirable" of three Boardman to Hemingway routes.

The principal focus of our analysis centered, first, on the recommendations of the Union County B2H Advisory Committee. The second aspect of our concern involved telling testimony from citizens whose homes, property, or interests are impacted by one or more of the proposed routes. Clearly, our conclusions here reflect some decisions that can best be described as "matters of clear conscience." While our recommended 'preferred' route essentially follows the existing 230-kv line, it is incumbent to stress that this is not a recommendation that the mapping of this route is final in its details.

Specifically, the staggering impact on property owners and residents whose ownership, views and enjoyment of our unique valley can only be described as, at best, enormous. Thus, we begin our recommendations by stating that a significant number of residents, as well as members of our Advisory Committee, understandably feel the "No Action" alternative should be considered as one of the options.

The "matter of conscience" referred to here specifically deals with the fallout from having a recommendation that may be construed as bringing power lines within clearly unacceptable distances of homes, buildings, and other structures. We spent a good deal of time addressing what is intolerable, as well as more tolerable. This again suggests that selecting a route, without a "No Action" recommendation, can only possibly work if specific siting flexibility, and not rigid mapping, is employed. The Union County Board of Commissioners, in the strongest terms possible, opposes adopting as absolutely final, any mapping that considers these intrusions on landowners as 'acceptable,' simply because of inadequate time or resources to identify alternatives to such encroachment(s). To that end, the Board submits the attached

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mapping of the "most" preferred route, with certain caveats: i.e.,

1. That extraordinary efforts be required of Idaho Power to identify and then use the greatest reasonable distance to separate the power lines from structures, especially residences or cabins. The predetermined distance must be no less than ¼ mile, however a greater distance is preferred (Attachment B is one example of how to possibly "thread" the needle" in an area that is particularly impacted otherwise).
2. Use of topography or existing easements and, whenever possible, the same approximate minimum ¼ mile (supra) distance to minimize impacts on identified structures and uses, whenever the 'preferred' alternative conflicts with the concerns expressed in this letter.
3. That, as with 2 (Supra), existing leases and right of ways be used and, as much as possible, followed in order to limit impacts.

Due to the overwhelming number of comments received questioning the need for the B2H transmission line, the Union County B2H Advisory Committee will continue to study the "No Action" alternative as we move forward.

Respectfully,

Jack Howard
Chairman

Steve McClure
Commissioner

Mark D. Davidson
Commissioner

Cc:
Jerome Perez, BLM State Director
Ted Taylor, Union Co. B2H Advisory Chair
Jeff Merkley, U.S. Senator
Ron Wyden, U.S. Senator

United States Senate
WASHINGTON, DC 20510

June 15, 2016

Mr. Neil Kornze
Director
Bureau of Land Management
1849 C Street, NW
Washington, DC 20240

Dear ~~Director Kornze~~ Neil,

I am writing to encourage you to open a new public comment period for the segment of the Boardman to Hemingway Transmission Line Project (B2H Project) in Union County, Oregon, so the portion of the line in the vicinity of La Grande can receive meaningful consideration before any decisions are made. I have written the Bureau of Land Management (BLM) on several occasions regarding the proposed B2H Project. Addressing local concerns and providing adequate time for public education and comment for siting high-voltage interstate electricity transmission infrastructure is a complicated challenge, but must be fully attended to.

The BLM has conducted Environmental Impact Statement (EIS) development for B2H, however the agency's "preliminary preferred alternative" includes a route near La Grande, Oregon that has yet to receive recent, well-advertised public review. Property owners who could be affected by this recently announced route are only now receiving letters from Idaho Power requesting permission to access their land for resource reviews. In a recent visit to La Grande, Oregon for a town hall meeting, it was made clear to me that an opportunity to thoroughly discuss this segment of the route before any decisions are made, with opportunity for property owner and community input would be very helpful and could forestall serious challenges.

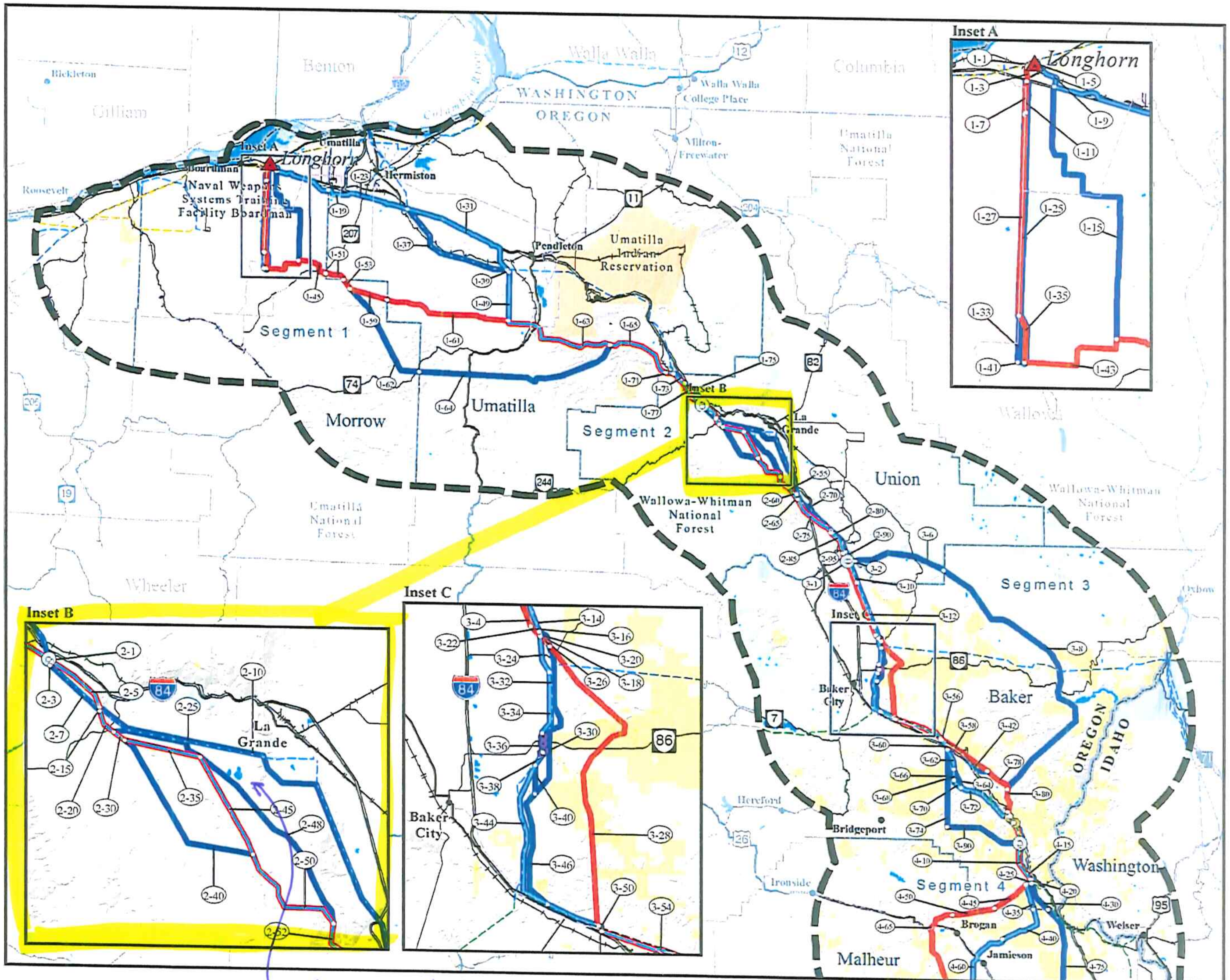
It is critical that the federal government identify the impacts of the B2H Project on communities—including impacts to public and private property, the environment and cultural resources. As such, I also encourage you to visit the area and solicit comments regarding impacts of your proposed preferred alternative to the Old Oregon Trail, Morgan Lake Park and private property as it relates to the citizens of La Grande, Union County and the country. I request that you provide this public comment opportunity beginning immediately. Thank you for your consideration, and please reach out to my staff, Kathleen Cathey (541-962-7691), if you have any questions.

Sincerely,

Ron Wyden

Ron Wyden
United States Senator

cc: Donald Gonzalez, Vale District BLM



Morgan Lake

Alternative Routes (NORTH)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

- Project Area Boundary
- Substation (Project Terminal)
- Preliminary Environmentally Preferred Alternative Route
- Applicant's Proposed Action
- Alternative Route
- Link Number
- Link Node
- Segment Node
- Flagstaff 230kV Rebuild (North Inset C & South Inset A)
- Double-circuit 138/69kV Rebuild (South Inset B)

Land Ownership

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

General Reference

- City or Town
- 500kV Transmission Line
- 345kV Transmission Line
- 230kV Transmission Line
- 138kV Transmission Line
- 69 - 115kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary

SOURCES:
Land Status, BLM 2014, 2015; City or Town, 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;
Water Bodies, ESRI 2013; State and County Boundaries, ESRI 2013

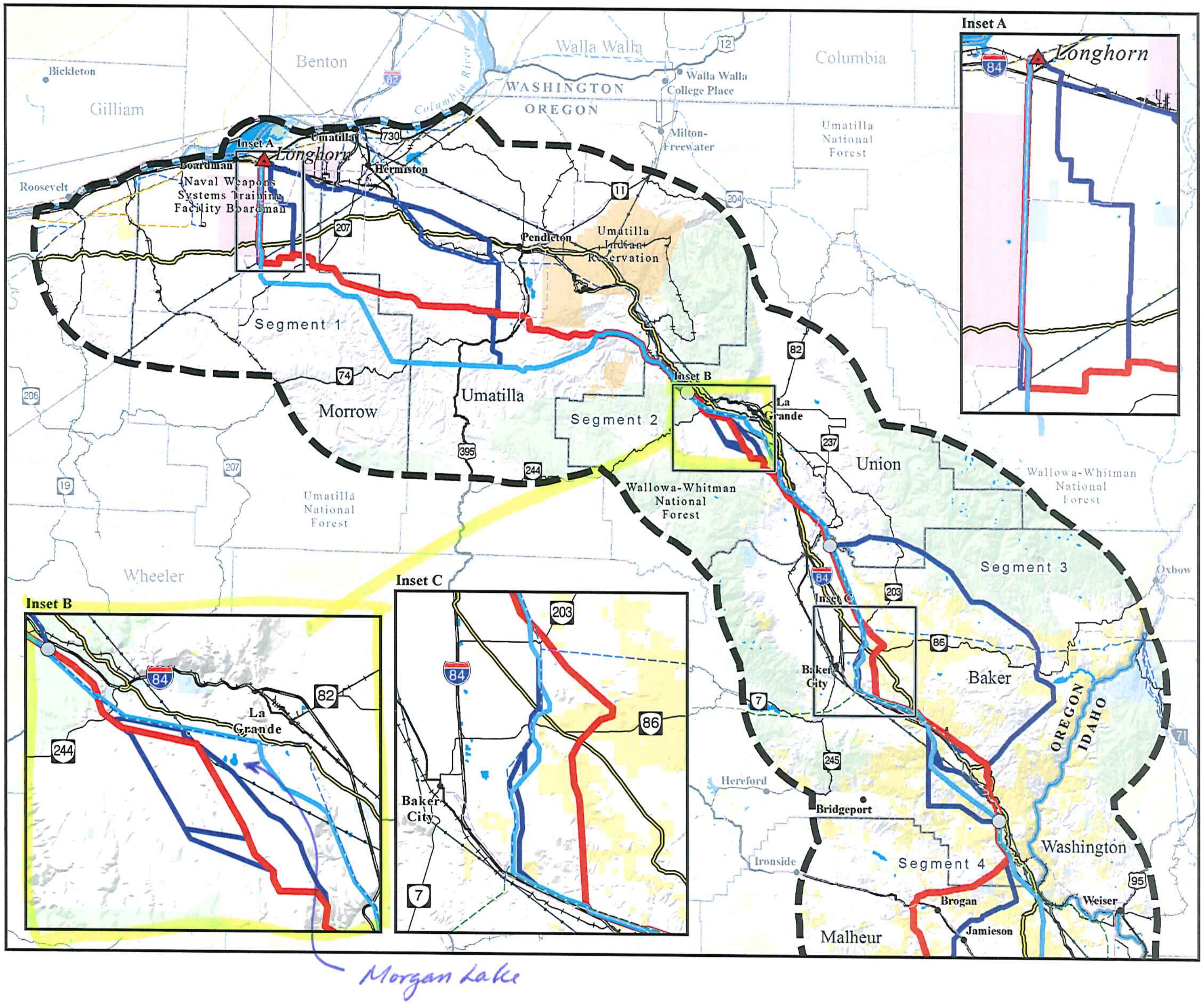
NOTES:
- The alternative routes shown on this map are draft and may be revised and/or refined throughout the development of the Project.
- Substation symbols do not necessarily represent precise locations.
- No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness 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: October 16, 2015
Date Printed: December 14, 2015

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

Susan Geer Cross Exam Exhibit 304

Geer 304/6



Preliminary Agency Preferred Alternative (NORTH)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

- Project Area Boundary
- Substation (Project Terminal)
- Preliminary Agency Preferred Alternative
- Applicant's Proposed Action
- Alternative Route
- Segment Node

Land Ownership

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

General Reference

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

SOURCES:
Land Status, BLM 2014, 2015; City or Town, 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;
Major Rivers, USGS and BLM 2013, USGS 2015; Water Bodies, ESRI 2013;
State and County Boundaries, ESRI 2013;
Oregon National Historic Trail Congressional Designated Alignment, BLM 2015

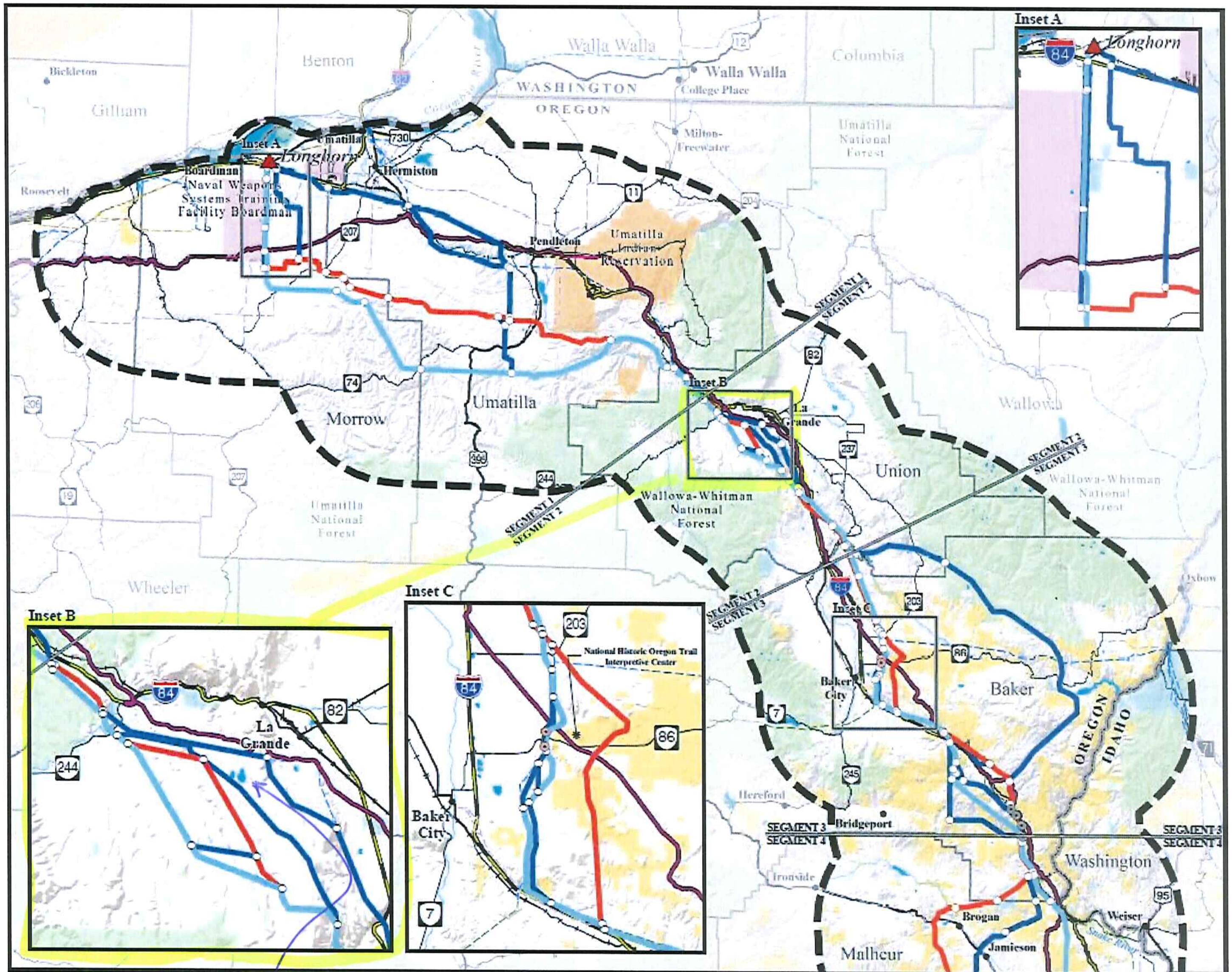
NOTES:
- The alternative routes shown on this map are draft and may be revised and/or refined throughout the development of the Project.
- Substation symbols do not necessarily represent precise locations.
- No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness 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
Date Printed: March 15, 2016

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

Susan Geer Cross Exam Exhibit 304

Geer 304/7



Morgan Lake

Map 2-11a

Applicant's Proposed Action Alternative and Agency Preferred Alternative Routes (Northern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

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

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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: Draft 9/30/16

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

Susan Geer Cross Exam Exhibit 304

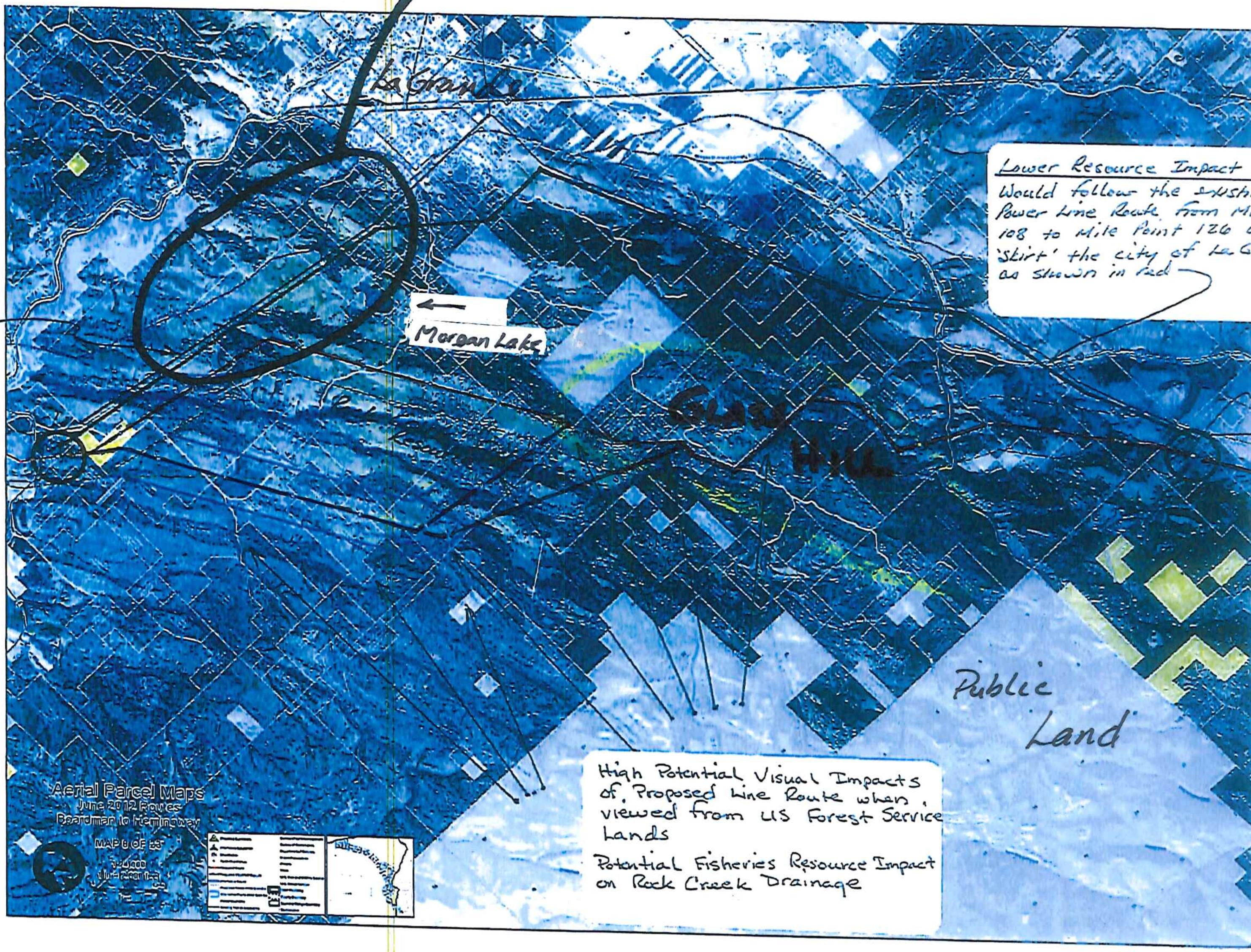
Geer 304/8

300491

OREGON TRAIL ROUTE REVIEW AREA
Referenced Images from this Location

Existing 230kv Power Line Route Not Shown by Idaho Power on this map.

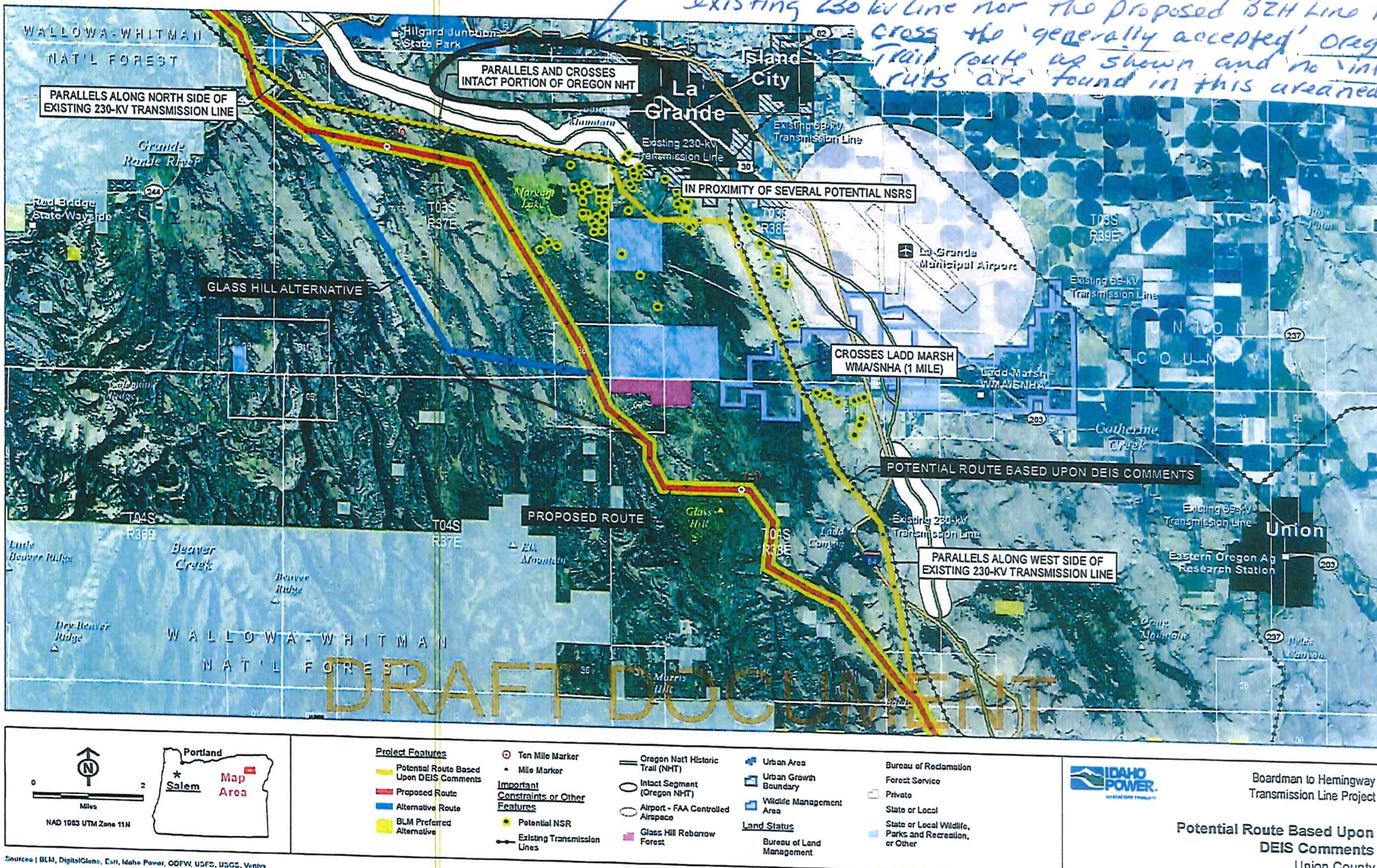
Mile Point 108



Mile Point 126

Drawing Taken from Idaho Power "Project Fact Sheet, for Oregon Residents" dated 2-09-15

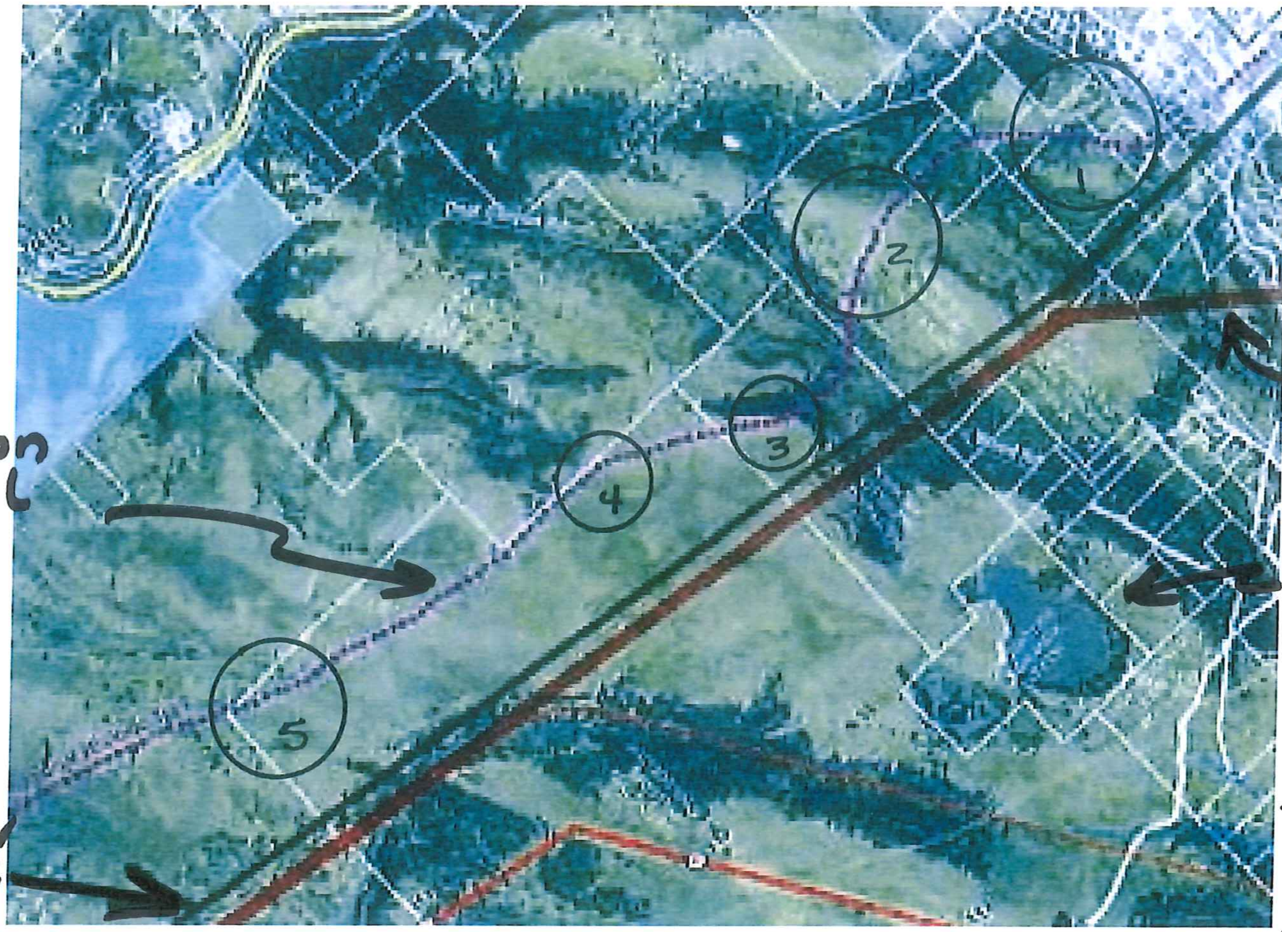
Incorrect assertion - as shown, neither the existing 230 kv line nor the proposed B2H line route cross the 'generally accepted' Oregon Trail route as shown and no 'intact' ruts are found in this area near the line.



Note the number of residence built on or near the marked Oregon Trail route through this area.

Susan Geer Cross Exam Exhibit 304

Geer 304/10

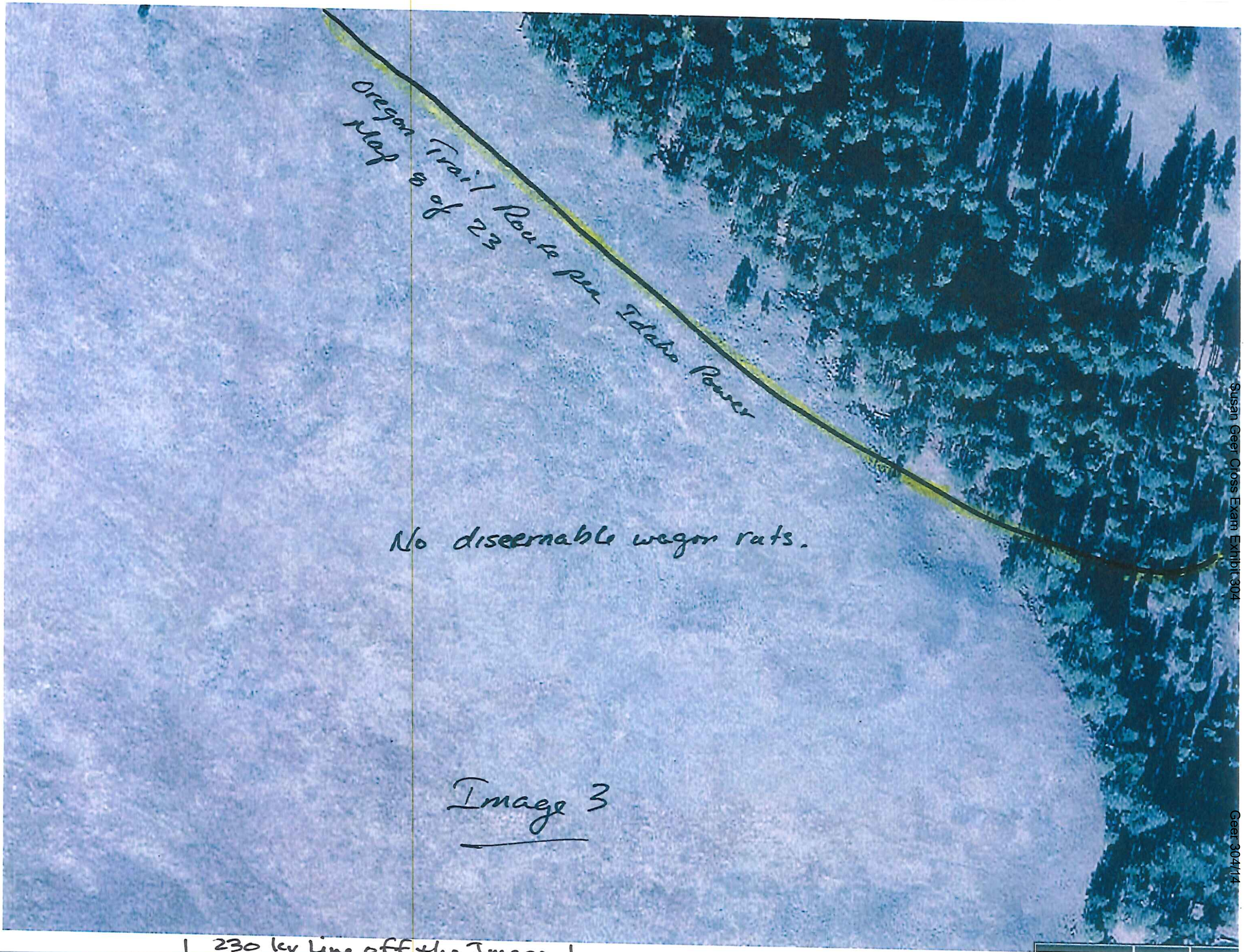


Note: Per EIS the line in the shown proposed location is not visible from Morgan Lake due to elev. of the two locations.

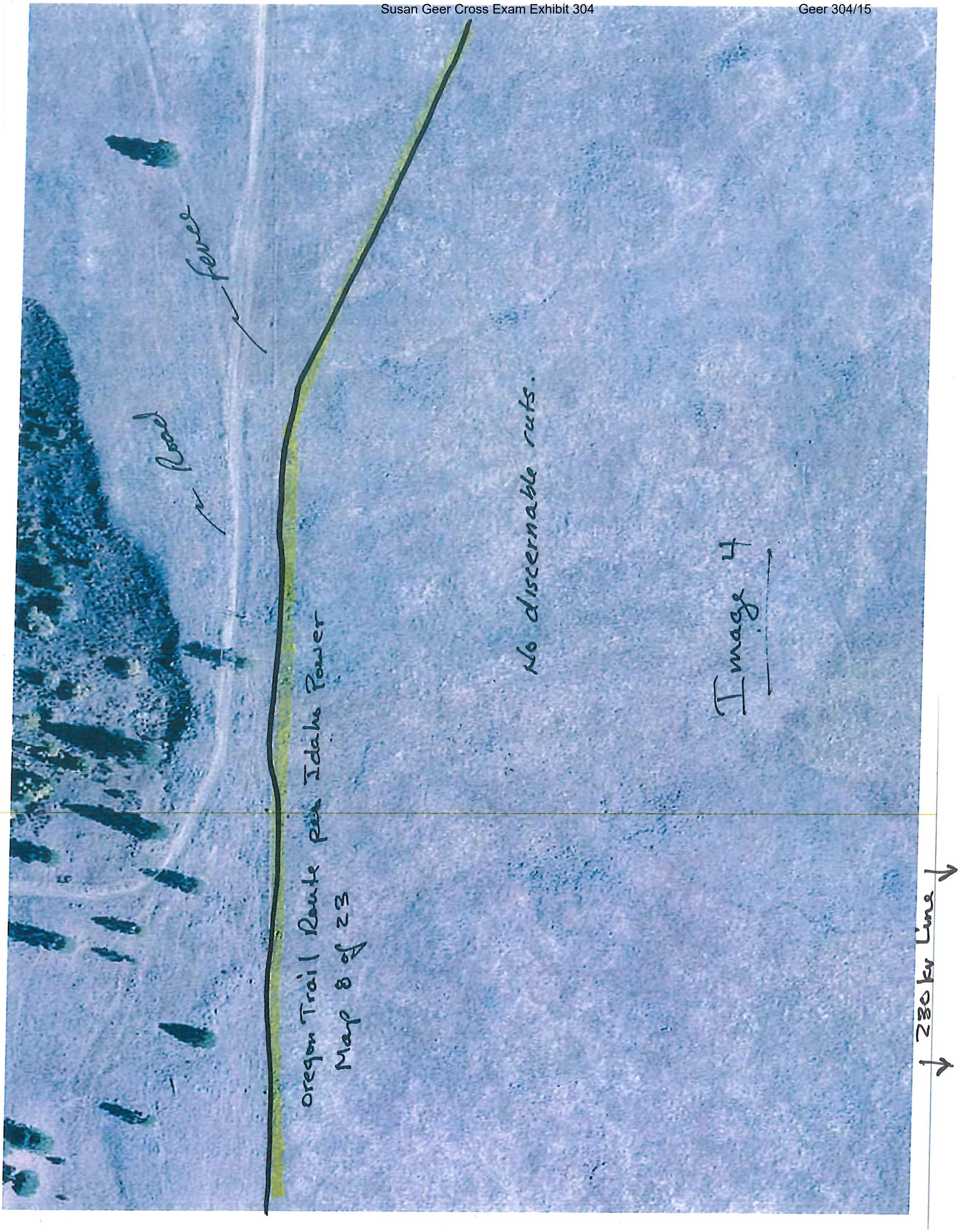
Location of 'Bing Map' Images along Oregon Trail Route

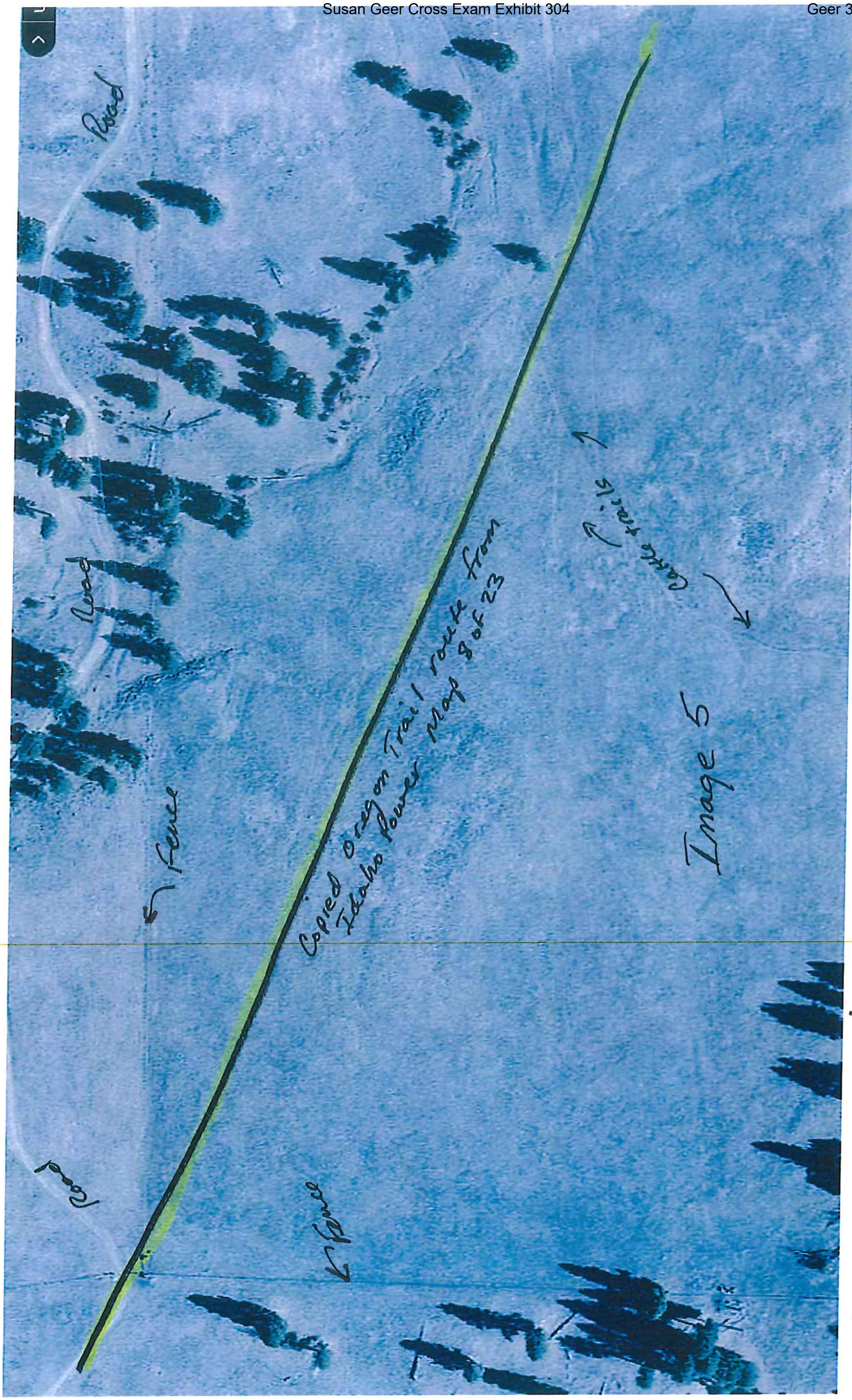

La Grande
Pine Crest Dr
Modelaire Dr
Allium St
Balsa St
W Hawthorne Dr
W Hawthorne Dr
Oregon Trail Route
Idaho Power
Image 1
230 kv Line off the Image


Road
Road
Undetermined Depression May have a fence along it. Oregon trail did not travel north in this location.
Oregon Trail Route per Idaho Power Map 8 of 23
Image 2
Road
Road
230 kv line off the Image



230 kv Line off the Image


fence
Road
Oregon Trail Route per Idaho Power
Map 8 of 23
No discernable ruts.
Image 4
230 kv Line


Road
Road
Fence
Copied Oregon Trail route from Idaho Power map 8 of 23
Cattle trails
Image 5
Fence
Road

230 kv Line

March 16, 2015

Boardman to Hemingway Transmission Line Project
P.O. Box 655
Vale, OR 97918

RE: Boardman to Hemingway Transmission Line Project Draft Environmental Impact Statement (DEIS)

The following input to the DEIS is specific to the proposed portion of the transmission line where it would cross the predominately forested lands on Glass Hill and then proceed northwest above Rock Creek in Union County, see project map with notes and references titled 'Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway, Map 8 of 23', *attached*.

Negative Impacts of Proposed Route Across Glass Hill

This route, including the alternate, as proposed by Idaho Power Company (IPC) will have unacceptable long term negative impacts on wildlife and their habitat; on the predominately forested areas; on the visual impact from the National Forest land to the south and west; and on the numerous land owners in this area.

The more recent and current landowners in this area have worked hard to restore their properties to a more undeveloped and natural state and have been very successful in returning their land and streams to the more pristine conditions that were present prior to the turn of the century when the area was extensively homesteaded and then in more recent years when the area was extensively roaded and logged. The landowner efforts have resulted in an extraordinary restoration to the areas original natural resources and character, this corresponding improvement in habitat has contributed to a substantial rebound in the wildlife population and more recently returning numbers of steelhead to Rock Creek.

Wildlife

The DEIS correctly identifies that regardless of the route across Glass Hill the line would result in 'long-term high impacts' to the wildlife habitat, see page 3-288, Segment 2 – Wildlife Habitat. The DEIS also properly shows that this route will go through a large portion of existing high quality elk wintering range, see 'Figure 3-18 Elk Habitat map on page 3-242, *attached*.

Forested Lands

The route across Glass Hill does not meet the requirements of the Oregon Statewide Planning Goals & Guidelines, Goal 4: Forest Lands, *attached*. On Page 3-395 of the DEIS, compliance with this condition is identified and it states 'The purpose of Goal 4 is to conserve forest lands.' As stated below:

> OAR 660-015-0000(4), Forest Land, attached:
> To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Then under the Guidelines Section, it has the following requirements:

> B. IMPLEMENTATION
> 1. Before forest land is changed to another use, the productive capacity of the land in each use should be considered and evaluated.
> 2. Developments that are allowable under the forest lands classification should be limited to those activities for forest production and protection and other land management uses that are compatible with forest production. Forest lands should be available for recreation and other uses that do not hinder growth.
> 3. Forestation or reforestation should be encouraged on land suitable for such purposes, including marginal agricultural land not needed for farm use.
> 4. Road standards should be limited to the minimum width necessary for management and safety.
> 5. Highways through forest lands should be designed to minimize impact on such lands.
> 6. Rights-of-way should be designed so as not to preclude forest growth whenever possible.
> 7. **Maximum utilization of utility rights-of-way should be required before permitting new ones.**
> 8. Comprehensive plans should consider other land uses that are adjacent to forest lands so that conflicts with forest harvest and management are avoided.

My calculations indicate that the proposed route across Glass hill from mile point 117 to 122 will go through approximately 5 miles of property that has historically been moderately to heavily forested (as identified by reviewing areas shown in green on the USGS topography map for this area) and if the 250 foot wide utility corridor is placed on this 5 mile route it will result a 151 acre loss of timber producing land which will also reduce the thermal/hiding cover for the wildlife.

Fish

Even though the DEIS In Section 3.2.5, Fish Resources on page 3-369 identifies that – "short-term direct and indirect effects to listed and candidate species from project construction of the Glass Hill Alternative would be high", it does not appear that the DEIS properly evaluated the potential long term negative impacts to the fish habitat in Rock Creek. On page 3-368 it seems to only consider stream crossings and states:

> Glass Hill Alternative
>
> The Glass Hill Alternative crosses the same Upper Grande Ronde River tributary streams and as the Proposed Action and has the same number of stream crossings, although 2 crossings would be at different locations than the Proposed Action. Both crossings would occur on perennial streams at a culvert. Both stream crossings support fish populations; one crossing on Little Rock Creek supports redband trout and other resident fish species (non-protected species) and the second crossing at Rock Creek supports Snake River Basin steelhead and redband trout. The Glass Hill Alternative would have one less crossing than the Proposed Action where steelhead are present.

Given the proposed route would run along Rock Creek for over 8 miles from mile point 109 to between mile point 118 and 119 where it turns east to go across Glass Hill and would be located on hillsides and ridgelines that drain into Rock Creek and thus the effects are not just limited to the 'crossings'. Given the severe slopes in several areas along the route it should be expected this route will result in additional and ongoing sedimentation making it into Rock Creek but it does not appear this has been properly evaluated?

Back in the mid 1970's I spent considerable time on Rock Creek in the spring and observed spawning anadromous fish in Rock Creek south of where the proposed line comes over Glass Hill at mile point 118. Then later after the surrounding area was extensively logged I no longer observed these fish. Recent studies conducted by the Confederated Tribes of the Umatilla Indian Reservation, letter to Mr. Allen, *attached*, are finding increasing numbers of spawning steelhead which are identified as an Endanger Species Act fish species. This summary also notes that the Rock Creek watershed is "...ranked second highest priority for conservation actions within the Upper Grande Ronde by the Natural Resource Conservation Service (NRCS) 2013 Conservation Implementation Strategy." The DEIS needs to do more than just evaluate the 'crossings' associated with Rock Creek and it needs to perform a more thorough evaluation of the fish species present as it does appear that 'endangered species' are present and will be negatively impacted by both the proposed and alternate route.

Visual

In reviewing the EIS I did not find where the visual impact of the proposed line route across Glass Hill was evaluated when being viewed from people using the National Forest land to the west and south of the proposed route, from areas in the proximity of Elk Mountain, the ridges along Rock Creek and from the Beaver Creek watershed area as shown on the attached Aerial Parcel Map. Given the proposed route would come across the top of Glass Hill and be on the 'skyline' for over 1 mile at mile point 119 to 120, and then due to the line route proceeding along the western facing slopes and ridge lines above Rock Creek for over 6 miles from mile point 113 to 119 which is predominately open landscape, it will be highly visible for these public lands when people are utilizing them to enjoy remote and undeveloped experiences, whether hunting, hiking, ATV riding, etc.

In this area the line will also be in view of the numerous private land owners beyond that identified from the 'Elk Song Platform' and which will degrade the visual quality to a greater extent than stated in the DEIS. The land owners have and enjoy these properties because of the remote and undeveloped character of this area and the visual impact needs to be considered from the entirety of these properties not just from selected 'platforms'.

In the visual impact section of the report it appears to only address the visual impacts of this section of the line when viewed from the developed area along interstate I-84; from areas around the Grande Ronde valley; and from La Grande. The impact of viewing the line from the remote areas along the proposed route will have a significantly higher negative impact as compared to being viewed from areas with numerous existing developments; ie. the freeway, existing transmission line, residences, farm and ranch buildings, communication towers, etc. The high visual impacts form the more remote areas should have a significantly higher significance than the visual impacts from the areas with existing developments.

Noise

My experience with the area between proposed mile point 115 and 119 is that it is without noise/sound from civilization the majority of the time when motor vehicles are not present and firearms are not being discharged. In this area the sounds of the traffic on the freeway, the sound of trains and other mechanical noises from La Grande and the valley are not present. It is still an area where the sounds of nature and/or lack of un-natural sound can be enjoyed the majority of the time.

I strongly suspect that this serenity is a contributing factor in the high wildlife populations in this area. Construction of the line in this area would introduce the corona/static noise associated with the electrical potential in the line and result in long term negative impact on the serenity of this area. At a minimum, the impact of un-natural noise on remote areas and wildlife should be given greater consideration than the noise impacts on areas where all types of un-natural noise are already present and ongoing.

Recommended Lower Impact Route to the East of Glass Hill

To minimize the impact of the line routing through this area the line should follow the existing 230 kv transmission line from mile point 108 to 126 and 'skirting' La Grande as drawn on the attached 'Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway, Map 8 of 23', *attached*.

This route would significantly reduce the negative impacts of the proposed route as a result of the following:

- Predominately follows the existing electrical utility corridor eliminating the need to create a new corridor and thus reducing the amount of forest land, wildlife habitat, recreational areas and landowners impacted.
- Stays in predominately opened landscape and will be only visible from Morgan Lake in a small area to the northwest.
- Remains 'out of sight' of the National Forest lands as described previously thus eliminating the resulting negative visual impacts from these remote areas.
- Follows closer to the edge of the elk wintering range in already developed areas as compared to going through the more remote east quarter of the area which will be about 5 miles away from the easterly edge, see attached Elk Habitat Map, November 2014, *attached*.
- The visual impact of this new line as it follows the existing 230 kv line is minimized as the majority of the line is located against vegetated hillsides that will obscure the view of the line and the line will only be 'skylined' in two short sections where it would cross ridgelines south and west of La Grande.
- Prevents adding new roads and developments on the undeveloped portion of Glass Hill which would destroy the remote character of this area resulting in reduced land and recreational values for both the land owners and the public using adjoining lands.
- Will protect Rock Creek from additional sedimentation and the effects on the returning fish species.
- Will not add noise/sound to the remote area west of Glass Hill

This route would further reduce the disturbance of even more acres than described below in Section 2, Proposed Actions and Alternatives, on page 2-72, by following the existing line further than the Proposed Action and thus avoiding the additional effects on the 'relatively undisturbed landscape' on Glass Hill.

> In the Blue Mountains Segment, the Proposed Action is the Environmentally and Agency Preferred Alternative primarily because the Proposed Action would disturb fewer acres of winter range and cause less vegetation disturbance. When compared to the Glass Hill Alternative, the Proposed Action would disturb fewer acres of winter range during construction and fewer acres during operation. Agency considerations include the closer alignment of the Proposed Action to an existing transmission line for 3 of the 7.5 miles and avoidance of effects on a relatively undisturbed landscape.

Idaho Power Company Reasons for not Considering this Route

Myself and others have proposed various versions of the route proposed above to IPC on numerous occasions and as a result they provided the attached 'Feasibility of Locating the B2H Transmission Line East of Glass Hill' document with the associated 'La Grande Vicinity Map dated January 2011', *attached*, presenting the following reasons for not utilizing this route:

- High visibility from travelers on a 5 mile section of I-84 and from portions of the city of La Grande;
- Concerns expressed by Union County representatives;
- Proximity to residences on Foothill Ladd Canyon Road;
- Up to 3.6 miles of landslide prone hillsides;
- Five to six miles of severs side slopes;
- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed; and
- Does not meet 1500 foot reliability separation criteria.

I would provide the following information in response to each of the concerns presented by IPC:

- High visibility from travelers on a 5 mile section of I-84 and from portions of the city of La Grande;
  Although a valid concern, the resulting higher negative impacts of placing the line across the undeveloped portion of Glass Hill should far outweigh the visual impacts to travelers on a freeway and residents in the city with developments already present all around it.

- Concerns expressed by Union County representatives;
  These concerns were never elaborated on by IPC but reasoning for routing the line across Glass Hill as compared to following the existing line should follow the same reasoning as presented above.

- Proximity to residences on Foothill Ladd Canyon Road;
  Again, although a valid concern it should not result in placing the line across the undeveloped portion of Glass Hill as compared to placing it along the existing transmission line and other developments in the valley.

- Up to 3.6 miles of landslide prone hillsides;
  IPC provided information showing historical slide areas highlighted, as a result I followed the entire length of the existing 230 kv line in this area and did not find any indication of any recent slide activity and if this is an actual concern it would seem that IPC would have moved the existing 230 kv line. The topographic maps of the location along the existing 230 kv line route do not show features such as springs or areas that will hold rain water and result in the hill side becoming unstable in the future.

- Five to six miles of severe side slopes;
  The hillsides above Foothill Road are not significantly 'steep', but even though IPC asserts them to be steep, they were able to install the existing 230 kv line along this hillside and if they were able to construct this line and others like the transmission line to Hells Canyon Dam they should be able to construct the line along Foothill Road without much trouble? They seem to be claiming that it may not be 'easy' to construct, this should not be a reason to run it through the undeveloped higher impact area on Glass Hill.

- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed;
  Another valid concern but placing the line across slightly over 1 mile of the wildlife area which is predominately open landscape and that already has a transmission line on it would have a significantly lower impact on wildlife than placing it across over 10 miles of undeveloped forested land with exceptional wildlife habitat. I have contacted the Oregon Department of Fish and Wildlife (ODFW) and the only concern I identified from them was associated with the line being on or close to the wetlands which could result in significant bird impacts, but placing the line off the wet lands area above Foothill Road did not cause them significant concern. I have extensive documentation confirming this and I also have

documentation showing that IPC had not had any discussions with the ODFW on the possible line location across the wildlife area until April 4, 2011 which demonstrates they only made assumptions about ODFW not wanting the line to cross the wildlife area during the scoping and proposed route development.

- Does not meet 1500 foot reliability separation criteria;

  IPC was never able to provide any information that validated the separation criterion of 1500 feet and I did extensive research to try and validate it myself without success. Chapter 2 of the DEIS report provides the following information starting on page 2-67:

  2.4.2.1 INSTALL DOUBLE-CIRCUIT NEW TRANSMISSION LINES ON EXISTING TOWERS IN THE STUDY AREA
  One of IPC's objectives in proposing the B2H Project is to improve system reliability between the Boardman and Southeastern Idaho areas. System reliability is generally improved by adding redundant transmission lines so that if one line is damaged or otherwise not in service, the other one can continue to provide service. However, locating the proposed B2H 500-kV line closer than 250 feet to other high-1 voltage lines would create "Adjacent Transmission Circuits" (WECC 2012). Adding Adjacent Transmission Circuits does not improve a system's reliability rating because a single event could disrupt service on both transmission lines. This alternative was considered but eliminated from detailed analysis because it is ineffective in responding to the agencies' need to respond to the SF 299 application and because it is ineffective in meeting IPC's purposes for proposing the B2H Project.

  This information was not in the WECC System Performance Criteria that IPC provided me per my numerous requests on the separation criteria and although I was not able to find information supporting this, if correct it would indicate that the new line could be constructed up to 250 feet from the existing line, thus invalidating the information they provided to me on the 1500 foot restriction.

  As a result of this and because there have been at least two 500 kv transmission lines built in recent years that are less than 250 feet away from existing 500 kv, and 230 kv lines, indicates to me that this criteria/restriction may not exist. Last year BPA completed construction of a new 500 kv transmission line within approximately 100 feet from two existing 500 kv lines on the north side of the Columbia River between the John Dan and McNary Dam substations. More information on this line can be found at (http://www.bpa.gov/transmission/Projects/line-projects/Documents/map-McNary-John_Day-October_2008.pdf), map *attached*. Then I've *attached* pictures of the 500 kv transmission line from the Calpine power plant south of Hermiston, Oregon that connects to the BPA McNary Substation which was constructed next to the existing north end of the same 230 KV line that goes to La Grande and I measured the distance between these lines as shown on the pictures. This shows that the support structures were placed less than 100 feet apart with the conducting lines only being approximately 75 feet apart.

  Lastly, *attached* is a picture of the numerous 500 kv lines above Rufus, Oregon which creates more doubt on the existence of any significant separation rule and begs the question of the significance of having the B2H line built a significant distance from the existing 230 kv line when all of these lines are so close together?

  Again, even if a separation criterion of some type does exist, this should not result in placing the line across Glass Hill and creating the higher adverse impacts.

EIS Information Correction/Clarification

It needs to be noted that the information provided in the Executive Summary on page S-7 and partially restated again in Chapter 2, Proposed Action and Alternatives, on page 2-57 on the Glass Hill Alternative is not correct, see information copied from page S-7 below:

Glass Hill Alternative
The Glass Hill Alternative was developed to address concerns about the Proposed Action's proximity to the Ladd Marsh Wildlife Management Area and visibility concerns from La Grande in Union County. The Glass Hill Alternative is approximately 7.5-miles-long located to the west of the Proposed Action on private land in Union County near La Grande, Oregon. The Glass Hill Alternative is the same length as the Proposed Action.

Neither the proposed route across Glass Hill nor the alternate route are in '...proximity to the Ladd Marsh Wildlife Management Area', nor should there be any '...visibility concerns from La Grande in Union County' as neither of these routes as proposed can be seen from La Grande. These statements would have been true had the line been routed as proposed above along the exiting 230 kv line over to the gas pipeline line route and had the proposed 'Alternate' route followed the existing proposed route across Glass Hill which is not the case. The information on the Glass Alternative needs to be corrected to identify the actual reason why it was proposed as shown.

Next, in Chapter 2, Table 2-12. Summary of Effects by Alternative on page 2-78 indicates that the Glass Hill routes would have the following Wildlife Resource impacts, 'Big game – long-term moderate impacts. Construction impacts-moderate.' Yet in Chapter 3 on page 3-288 of the EIS it states the following:

> SEGMENT 2—BLUE MOUNTAINS
>
> Wildlife Habitat
>
> The majority of habitat that would be impacted in Segment 2 is woodland/forest habitat followed by shrubland habitat. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way for the alternative in Segment 2 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.
>
> Forests and woodlands cleared during construction would be impacted for much longer than other habitat types. This impact would displace wildlife that use forests and woodlands for many generations until vegetation can recover. In addition, due to the greater potential for edge effects where this habitat type is cleared compared to the other habitat types, forest/woodlands adjacent to cleared areas would be impacted as well. Though mature forests are rare, the impacts to this forest type, such as edge effects, would be more pronounced due to the more distinct difference between mature forest and adjacent cleared areas, and the longer recovery time of this type of habitat (several decades). Wildlife species that use this habitat type, for example northern goshawk and American three-toed woodpecker, would experience habitat loss until areas re-grow during Project operations, in this case, several decades. Removing trees would cause the loss of both present habitat (canopy cover, live trees, forest understory) and potential future habitat (snags and downed wood from dead, mature trees). Woodland/forest habitat support diverse assemblages of wildlife species, often including species that are specific to that habitat type. Because forests and woodlands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.
>
> The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.

The information in Table 2-12 appears to be incorrect as The information in Chapter 3 of the report properly identifies that the wildlife habitat impacts for these routes would be 'long-term high impact', not moderate as shown in the table.

Please incorporate this input into the Final EIS to ensure this line has the lowest possible impact on the land, the wildlife, the public and the landowners on Glass Hill and throughout the entire length of the project.

Sincerely,

Dan G. Turley

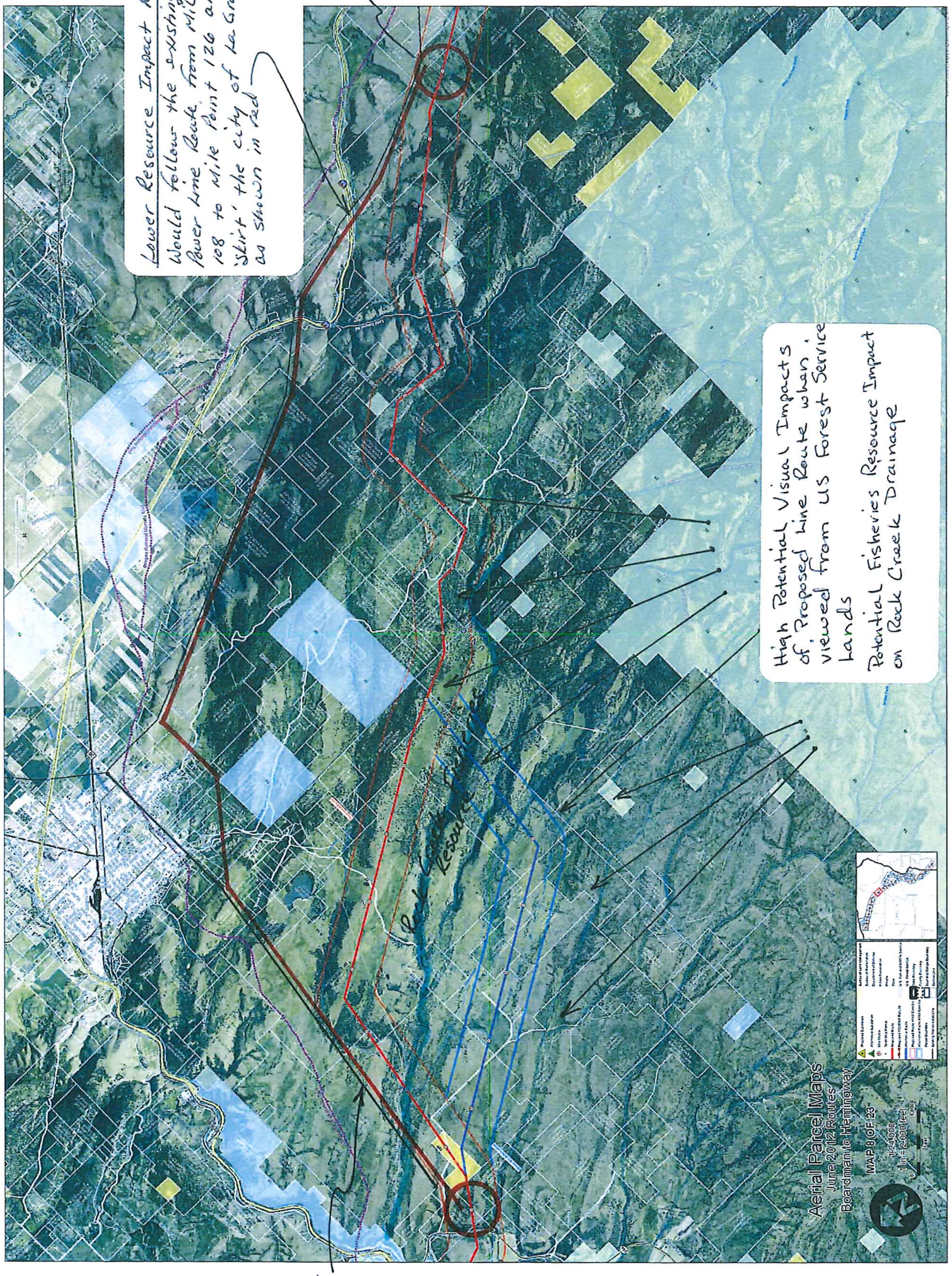
Dan Turley
855 East Quince Ave
Hermiston Oregon, 97838

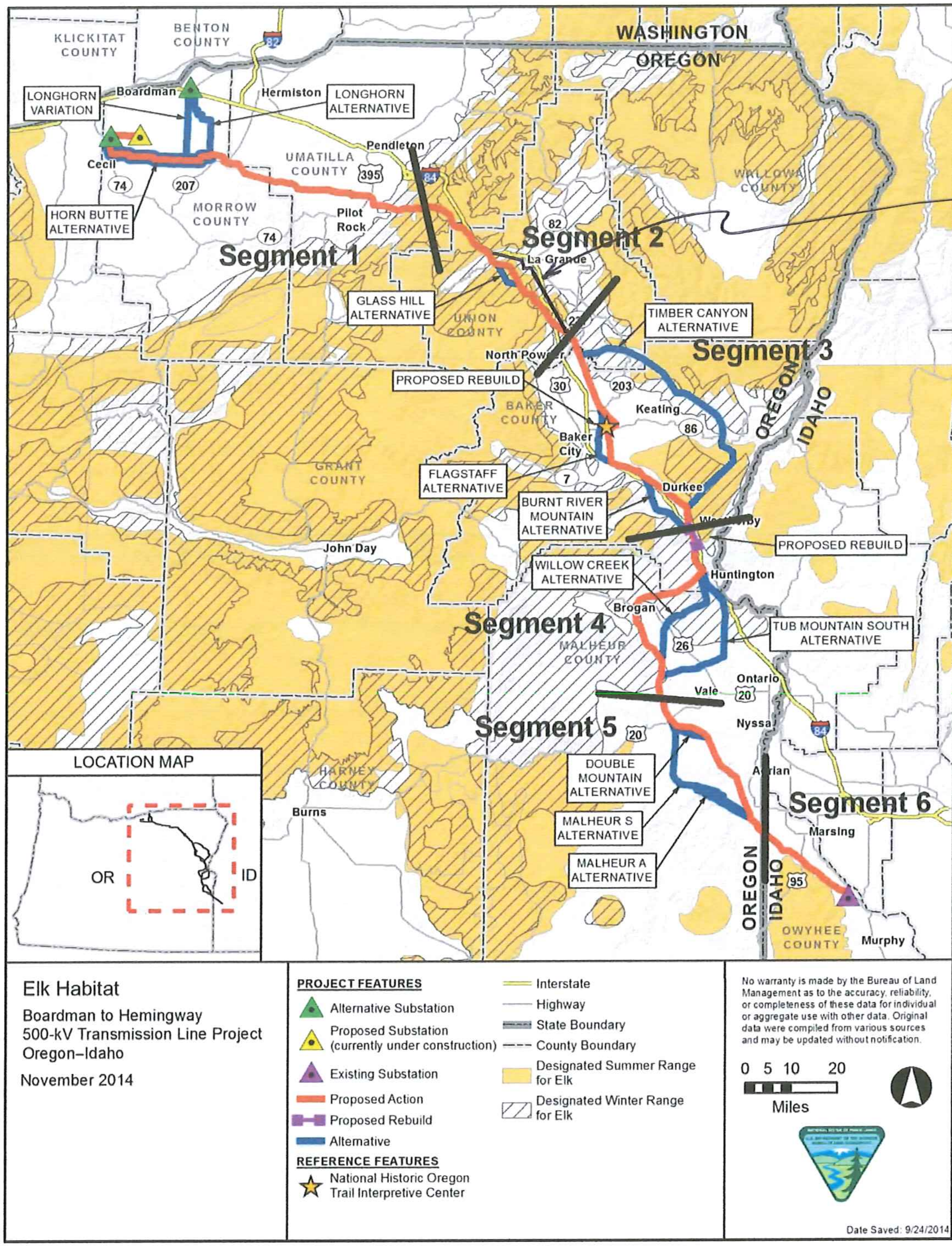
Representing the Glass Hill Coalition

Attachments:

1. Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway Map 8 of 23, showing proposed lower impact route and visual impacts from Forest Service lands
2. Figure 3-18 Elk Habitat map from page 3-242 of the DEIS
3. Oregon Statewide Planning Goals & Guidelines, Goal 4: Forest Lands
4. Confederated Tribes of the Umatilla Indian Reservation, letter to Mr. Allen
5. Feasibility of Locating the B2H Transmission Line East of Glass Hill' document with the associated 'La Grande Vicinity Map dated January 2011
6. http://www.bpa.gov/transmission/Projects/line-projects/Documents/map-McNary-John_Day-October_2008.pdf , BPA 500 kv transmission line placed next to existing 500 kv lines
7. 500 kv Power Line located within 100' of 230 kv line near Hermiston, Oregon
8. 500 kv transmission lines above Rufus, Oregon
9. Glass Hill Supporters List, 7 pages

Attachment 1





Lower Impact Route

Figure 3-18. Elk Habitat

Oregon's Statewide Planning Goals & Guidelines

GOAL 4: FOREST LANDS

OAR 660-015-0000(4)

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

USES

Forest operations, practices and auxiliary uses shall be allowed on forest lands subject only to such regulation of uses as are found in ORS 527.722.

Uses which may be allowed subject to standards set forth in this goal and administrative rule are: (1) uses related to and in support of forest operations; (2) uses to conserve soil, water and air quality, and to provide for fish and wildlife resources, agriculture and recreational opportunities appropriate in a forest environment; (3) locationally dependent uses;
(4) dwellings authorized by law.

IMPLEMENTATION

Comprehensive plans and zoning provide certainty to assure that forest lands will be available now and in the future for the growing and harvesting of trees. Local governments shall inventory, designate and zone forest lands. Local governments shall adopt zones which contain provisions to address the uses allowed by the goal and administrative rule and apply those zones to designated forest lands.

Zoning applied to forest land shall contain provisions which limit, to the extent permitted by ORS 527.722, uses which can have significant adverse effects on forest land, operations or practices. Such zones shall contain numeric standards for land divisions and standards for the review and siting of land uses. Such land divisions and siting standards shall be consistent with the applicable statutes, goal and administrative rule. If a county proposes a minimum lot or parcel size less than 80 acres, the minimum shall meet the requirements of ORS 527.630 and conserve values found on forest lands. Siting standards shall be designed to make allowed uses compatible with forest operations, agriculture and to conserve values found on forest lands.

Local governments authorized by ORS 215.316 may inventory, designate and zone forest lands as marginal land, and may adopt a zone which contains provisions for those uses and land divisions authorized by law.

GUIDELINES

A. PLANNING

1. Forest lands should be inventoried so as to provide for the preservation of such lands for forest uses.
2. Plans providing for the preservation of forest lands for forest uses should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

B. IMPLEMENTATION

1. Before forest land is changed to another use, the productive capacity of the land in each use should be considered and evaluated.
2. Developments that are allowable under the forest lands classification should be limited to those activities for forest production and protection and other land management uses that are compatible with forest production. Forest lands should be available for recreation and other uses that do not hinder growth.
3. Forestation or reforestation should be encouraged on land suitable for such purposes, including marginal agricultural land not needed for farm use.
4. Road standards should be limited to the minimum width necessary for management and safety.
5. Highways through forest lands should be designed to minimize impact on such lands.
6. Rights-of-way should be designed so as not to preclude forest growth whenever possible.
7. Maximum utilization of utility rights-of-way should be required before permitting new ones.
8. Comprehensive plans should consider other land uses that are adjacent to forest lands so that conflicts with forest harvest and management are avoided.

Attachment 4

Confederated Tribes *of the* **Umatilla Indian Reservation**

DNR Fish & Wildlife Programs

46411 Timíne Way
Pendleton, OR 97801

www.ctuir.org email: info@ctuir.org
Phone 541-276-3447

3/11/2015

Dear Mr. Allen,

Following our recent March 2015 conversations about Endangered Species Act listed fish use of the Rock Creek Sub-Watershed I would like to give you an update on the recent fish surveys/sampling conducted by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

- **Steelhead Spawning:** CTUIR started steelhead spawning surveys within the sub-watershed in 2011. Each year during the spawning season (March to June) approximately 12.1 miles of streams have been surveyed. These streams include Rock Creek (lower 4.8 mile), Graves Creek (lower 4.2 miles), Sheep Creek (lower 1.2 miles), Little Rock Creek (lower ½ mile), and Little Graves Creek (lower 1.4 miles).
  - The number of redds found each year range between 7 and 14 with an average of 10 per year for all stream miles combined.
  - Typical peak spawning occurs in April and May, However, in 2015 CTUIR observed 12 redds on March 10 within the lower 4.8 miles of Rock Creek.
  - On March 11th 2015 CTUIR biologists observed 3 steelhead redds on Rock Creek within the Elk Song Ranch property boundary. Juvenile *O.mykiss* were also observed on the ranch in Little Rock Creek.
- **Juvenile Steelhead/*O.mykiss* presence:**
  - **Snorkel surveys:** CTUIR conducted snorkel surveys on Rock Creek in 2011, 2012, and 2014 with estimated average densities of 1 fish per m^2 of pool habitat.
  - **Fish Salvage as part of restoration actions:** In summer 2014 CTUIR conducted salvage operations on Rock Creek to remove all fish species (including ESA listed fish) from areas of stream bed/bank disturbance during placement of large wood habitat. Methods used were electro-fishing and sein nets, with 24 sites salvaged. Results were:
    - 3,664 fish salvaged of which 2,185 were ESA listed fish (steelhead/*O.mykiss*).
    - ESA listed fish made up 59.6% of all fish captured.
    - Densities of captured ESA fish were 2.67 fish/m^2 of pool habitat (nearly 3 times the density of fish salvaged in Catherine Creek in the same year).
    - Snorkel surveys underestimated fish densities by approximately 60%
- **Juvenile Chinook Salmon presence:**
  - CTUIR recorded 30 juvenile Chinook in 2011 during snorkel surveys.

Limiting factors affecting the recovery of ESA fish species within this sub-watershed have been identified by the Grande Ronde Subbasin Plan (2009), Oregon Draft Recovery Plan for Spring/Summer Chinook and Steelhead Populations (2010), and Bonneville Power Administration's (BPA) Atlas process (2014) as:

- 1.1 Habitat Quantity: Anthropogenic Barrier
- 4.1 Riparian Condition: Riparian Condition
- 4.2 Riparian Condition: LWD Recruitment (STS)
- 6.1 Channel Structure and Form: Bed and Channel Form
- 6.2 Channel Structure and Form: Instream Structural Complexity
- 7.2 Sediment Condition: Increased Sediment Quantity
- 8.1 Water Quality: Temperature
- 9.2 Water Quantity: Decreased Water Quantity

Confederated Tribes *of the*
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www.ctuir.org email: info@ctuir.org
Phone 541-276-3447

The watershed is also ranked second highest priority for conservation actions within the Upper Grande Ronde by the Natural Resource Conservation Service (NRCS) 2013 Conservation Implementation Strategy.

As we discussed in early March water run-off from the ridges and slopes does naturally contribute water and sediment to the stream with these slopes typically remaining saturated for extended periods through the winter and spring into early summer. However, the addition of new roads within the Rock Creek drainage would be a concern for the potential negative impacts from concentrated or increased sediment supply to the stream system, particularly along the slopes and ridges of Rock Creek (as sediment quantity has been identified as one of the limiting factors affecting the recovery of listed species).

We look forward to working with you on restoration projects along the 13 miles of fish bearing streams on your ranch. These species are not only listed as threatened and/or endangered, but are also historically and culturally significant to the Tribe.

Leslie M Naylor

CTUIR Dept Fish and Wildlife
Assistant Fish Habitat Biologist
Grande Ronde Fish Habitat Program
Ag Service Center
10507 North McAlister Rd
Island City, OR 97850
Cell: 1-541-215-2245
Office: 1-541-429-7942

Feasibility of Locating the B2H transmission line East of Glass Hill

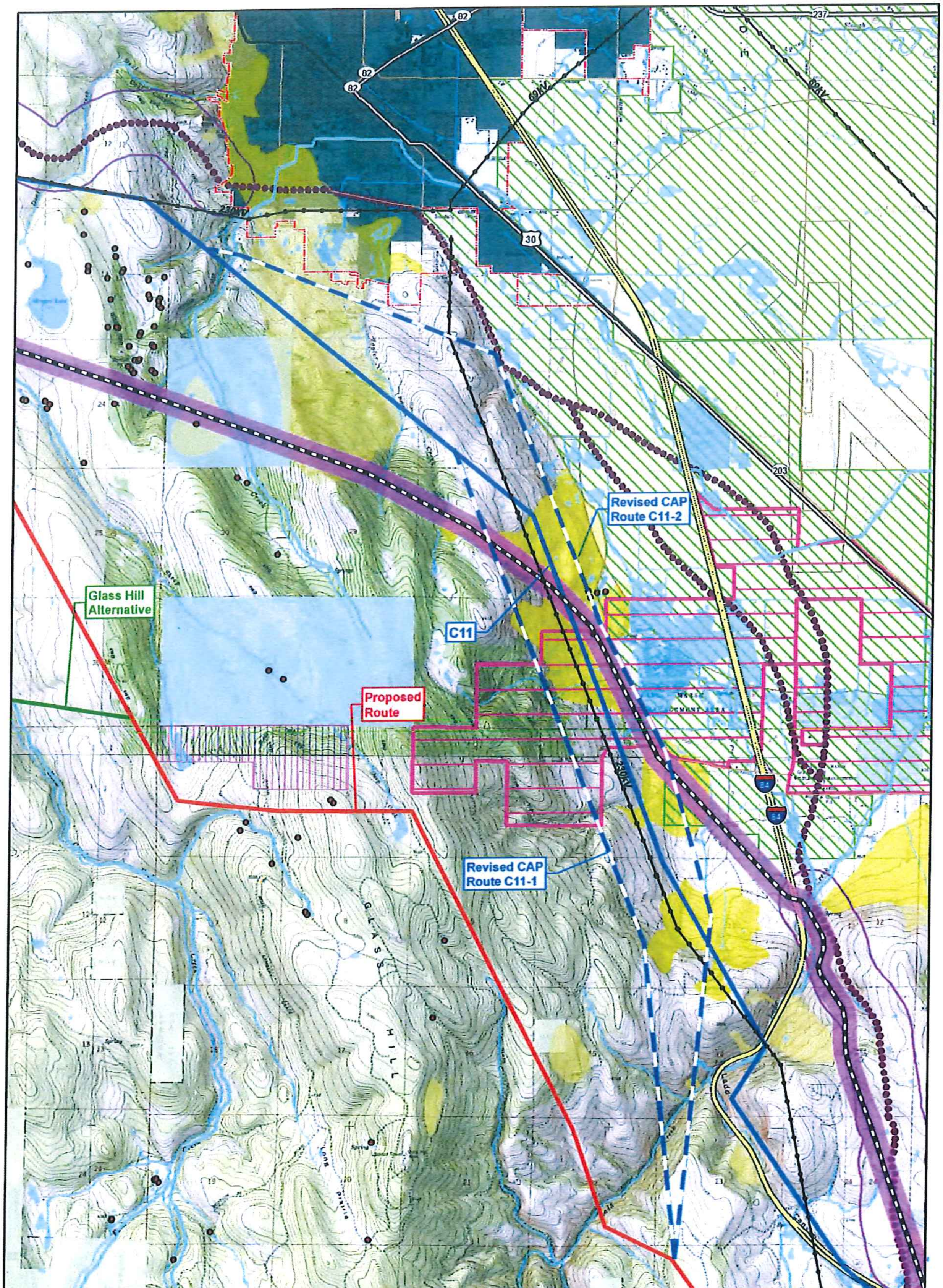
A question has been raised by local residents about the feasibility of locating the proposed B2H transmission line east of Glass Hill and closer to the existing 230 kV transmission line and natural gas pipeline. The attached figure shows the current location of the proposed (red) and alternative (green) routes as well as a route (solid blue) identified by local citizens during the CAP and designated C11. Nevertheless, it was determined to have more potential impact than either the proposed red or alternative green routes and was eliminated from further consideration by IPC. IPC revisited this analysis and again came to the same conclusion; Route C11 is not a preferred route.

Disadvantages of this route are:

- High visibility from travelers on a five mile segment of I-84 and from portions of the city of LaGrande;
- Concerns expressed by Union County representatives;
- Proximity to residences on Foothill Ladd Canyon Road
- Up to 3.6 miles of landslide prone slopes;
- Five to six miles of severe side slopes;
- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed; and
- Does not meet 1,500 ft reliability separation criteria.

To further consider concerns raised by local residents; IPC identified two additional routes: C11-1 and C11-2. A key consideration in developing these alternatives is the affect on LMWA. The 6,019 acre LMWA contains the largest remnant wetland in northeast Oregon. It is considered a Protected Area under OAR 345-022-0040 and therefore an exclusion area under ESFC regulations. However, there is an exception in the EFSC regulations that allows crossing of a Protected Area if the new transmission line can be located within 500 feet of an existing transmission line or pipeline. Following the existing transmission line crossing through Ladd Marsh WMA on the west side (Revised CAP Route C11-1) is not recommended. To meet the required 1500ft reliability separation would put the route on higher and steeper slopes than either Routes C11 or C11-2 and would still have similar disadvantages as described for Route C11.

However, by regulation, the proposed B2H transmission line could be located within 500ft of the existing pipeline and meet the required reliability separation (Revised CAP Route C11-2). IPC considered this additional route and even with the regulatory option of crossing the marsh, the Revised CAP Route C11-2 would result in greater impacts than the Glass Hill red and green routes. Where the route would need to cross the marsh, it would be located in wet meadow and a semi-permanent wetland associated with West Marsh Habitat Management Unit (HMU) and adjacent to the Glass Hill HMU. The HMU goals include the protection, enhancement and management of wetland habitats to benefit fish and wildlife species and upland habitats for a wide variety of wildlife species. Outside of LMWA it would still have the disadvantages cited above for C11 and C11-1.



LA GRANDE VICINITY

IDAHO POWER COMPANY
BOARDMAN TO HEMINGWAY
500kV TRANSMISSION LINE PROJECT

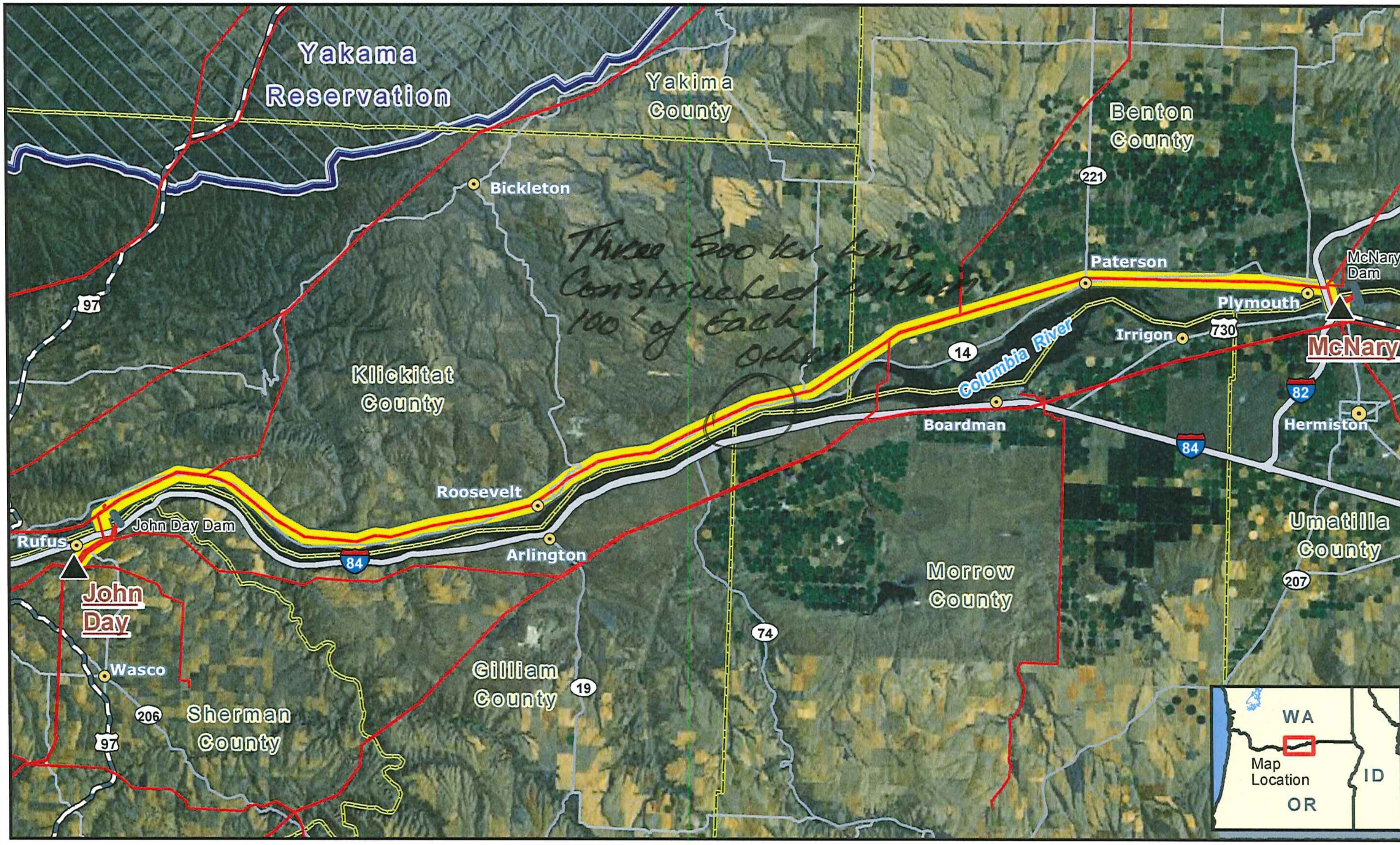
JANUARY 2011

IDAHO POWER

- Revised CAP Route C11
- CAP Route C11
- IPC's 12-6 Proposed Route
- IPC's 12-6 Alternative
- Structures
- Existing Pipeline
- Existing Transmission Line
- Existing Pipeline 500ft Buffer
- Scenic Byway Route
- Rebarrow Research Forest
- Special Status Fish Streams
- Oregon Trail
- Intact Oregon Trail Segment
- Urban Growth Boundary
- Wildlife Management Area
- OR Wetlands
- Exclusive Farm Use Zone
- Airport - Controlled Airspace
- Landslide Feature: Fan
- Landslide Feature: Landslide
- Urban Area
- US Forest Service
- State

0 1
Miles

LOCATION MAP



McNary-John Day Transmission Line Project

Legend

- Project Route
- Existing BPA Transmission Lines
- BPA Substation
- Indian Reservation Boundary
- County Boundary

1 inch equals 7.7 miles

0 3 6 9 12 15 Miles

N

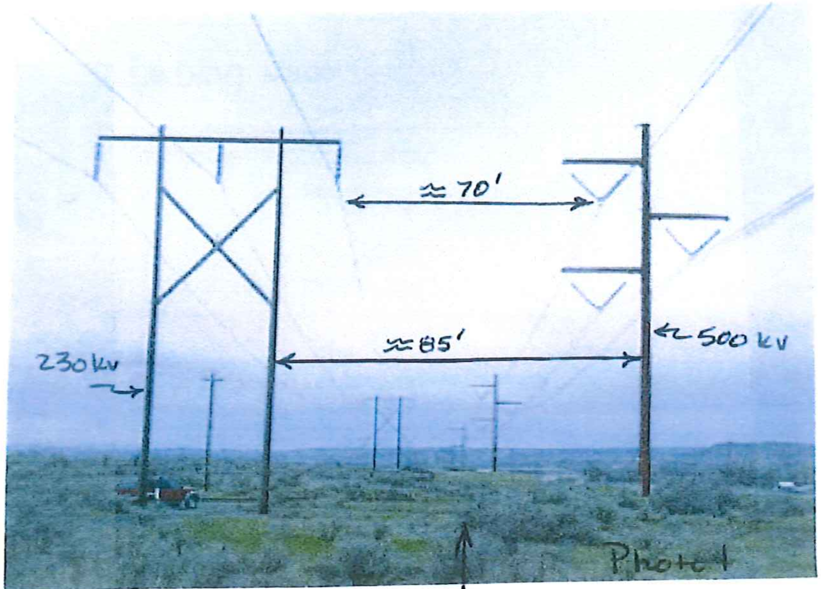
BONNEVILLE POWER ADMINISTRATION

Susan Geer Cross Exam Exhibit 305

Attachment 6

Geer 305/15

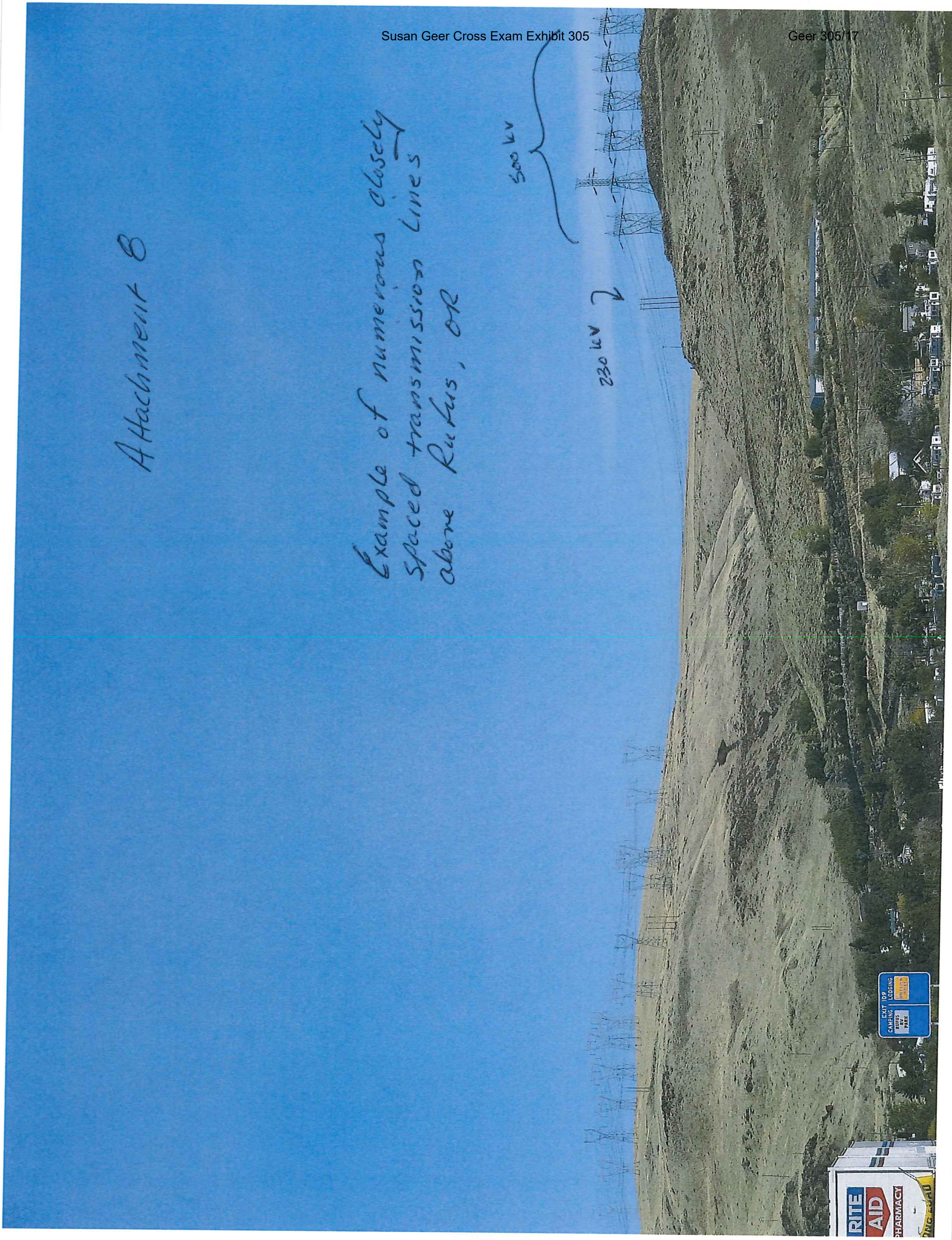
Print - Maps



Photo's showing 500 kv + 230 kv transmission lines, constructed less than 100' apart and within 100' of dwellings.

Attachment 8

Example of numerous closely spaced transmission lines above Rufus, OR



Attachment 9

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Daren Coon	365 S 4th Union OR 97883	786-4741	daren.Coon@Northwoodmail.Com	[signature]
2	Colby Lankford	1704 K. Ave, LaGrande, OR	663-6728	Colby.lankford@Northwoodmail.com	[signature]
3	Justin Kruse	1314 Z Ave LaGrande OR	624-2585	Justin.Kruse@Northwoodmail.com	[signature]
4	Shannon Rogers	1211 W Ave LaGrande OR	786-2744	Shannon.Rogers@Northwoodmail.com	[signature]
5	Dave Mann	PO Box 192 Cove Or	568-4565	dave.mann@northwoodmail.com	[signature]
6	Clint Williams	10502 W 5th St LaGrande, OR 97850	541-663-8574	clint.williams@northwoodmail.com	[signature]
7	Glen Cole	1500 Baltimore St Elgin, OR 97827	541-805-0345	gacofgems53@yahoo.com	Glen Cole
8	Thad Sells	61840 Blackhawk LaGrande	541-786-1193		[signature]
9	Ronnie Bonney	61984 Cottonwood Rd Lagrande	963-8843		[signature]
10	Amy Creson	114 Polk Ave. LaGrande, OR	663-6579		Amy Creson
11	Dave Decker	2505 E J Ct LaGrande, OR	910-2636		Dave Decker
12	Cody King	10405 F Ave. Island City	541-377-3545		Cody King
13	[illegible]	62624 Bird Lane	541-910-0776		[signature]
14	B. Bowe	59948 Down Rd	2092750320		[signature]
15	[illegible]	734 N 15 Ave	541-786-4169	Heather Scott	[signature]
16	[illegible]	396 PO Box LaGrande OR	541-910-1304		[signature]
17	[illegible]	2302 E O CT	541-663-1106		[signature]
18	Keith Williams	10608 S McAlister	541-910-9126		Keith Williams
19	Shawn Wood	1307 U Ave	541-910-5867		[signature]
20	Katie Turley	PO Box 1121 LaGrande OR	541 910-6284	kqueene@yahoo.com	Katie Turley

Attachment 9 cont.

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Marc Zollinger	5712 SE 62nd Ave Portland OR	541-228-4795	marc.zollinger@gmail.com	[signature]
2	Kimberly Slack	5712 SE 62nd Ave Portland OR	971-678-9852	kimmisegmail.com	[signature]
3	Caitin Novak	607 West Delta Union OR	541-562-9407	caitinnovak@gmail.com	[signature]
4	Philip Deench	2016 OAK St. La Grande	541 399 6953	deench@eou.edu	[signature]
5	Jason Jones	71727 Evers Canyon Rd Elgin 97827	541-536-4918	jajones@eou.edu	[signature]
6	McKenzie Evans	P.O. Box 492 Union, OR 97883	541-915-4405	mevans@eou.edu	[signature]
7	John Rinehart	PO Box 2887 La Grande 97850	541 962 6270	none	[signature]
8	Walker Powell	301 Jefferson St #6 La Grande 97850	541-620-8848	none	[signature]
9	DarylAnn Waltenburg	301 Jefferson St. #6 LaGrande 97850	541 620 1940	NA	[signature]
10	Lewis Whiting	1409 Walnut St. La Grande	541-589-1488	lewiswhiting@gmail	[signature]
11	Trey Regester	1617 washington La Grande OR	307-250-6613	tregester@eou.edu	[signature]
12	Caitlynn Barton	1607 6th st La Grande OR 97850	541-314-2260	Na	[signature]
13	Charitti Burghard	P.O. Box 127C North Hall LaGrande OR 97850	541-667-7984	cburghard@eou.edu	[signature]
14	KC Kilpatrick	P.O. Box 227D daughtery Hall La Grande 97850	580-5175	Kcann9619@gmail.com	[signature]
15	Rachelle Chamberlain	202 4th Street La Grande OR 97850	208-833-3629	rchamberlain@gmail.com	[signature]
16	Makenzie Forsyth	108A Daugherty Hall One University Blvd La Grande OR	509-832-3333	mforsyth@eou.edu	[signature]
17	Jenny Vardanega	219D North Hall, One University Blvd LaGrande OR	(971) 225-8936	jvardanega@eou.edu	[signature]
18	Evan Krohn	1404 N Hall Street	(541) 519-4155	ekrohn1995@gmail.com	[signature]
19	Shaw Crain	916 [illegible]	541-663-1227	[illegible]	[signature]
20	Brian Staebler	44596 Pocahontas Rd, Baker City OR	541-519-2289	rem7600S@gmail.com	[signature]

Susan Geer Cross Exam Exhibit 305

Geer 305/19

Attachment 9 cont

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road to ~~the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	Thomas Royer	1513 21st St., L.G.	541.514.8166	WALKINBOSS@GMAIL	T Royer
3	Marie Gaylord	1513 21st St., L.G.	868-294-4348	marie.gaylord@gmail	Marie Gaylord
4	Dan House	59620 Glass Hill Rd LG	541-805-8606	danhousenow@yahoo.com	Donald J House
5	Marti House	59620 Glass Hill Rd LG	541-963-9257	martihouse08@gmail.com	Marti House
6	June Wilber	Glass Hill Rd. LG			June Wilber
7	Renae Wilber	67828 Grays Corner Rd. Imbler, OR	541-534-4065	darrenae@oregonwireless.net	RWilber
8	Dale Wilber	67828 Grays Crn Rd Imbler, OR	541-534-4065		Dale Wilber
9	Blaine Wilber	Glass Hill Rd			Blaine Wilber
10	Lester Scott	" " "			By Permission
11	Mark Royer	420 Arrowhead Drive Nampa, ID 83686	(208) 442-5469	southpaw026@yahoo.com	Mark Royer
12	Joel Rice	59878 Glass Hill Rd. La Grande	541-786-2593	joelrice@me.com	
13	Paul Petersen	5551 Glass Hill Rd	541-910-2459		Paul Petersen
14	Rick Simonis	62556 [illegible] Rd [illegible]	541-910-4444	simonisrick@yahoo.com	Rick Simonis
15	Michael McAllister	60069 MORGAN LK RD	541 786 1507	WILDLANDMM@NETSCAPE.NET	MICHAEL MCALLISTER
16	MIKE ARMSTRONG	80792 KIES RD HERMISTON OR	541 980 5633	mike@cutbmed.com	
17	Cal Mulder	860 Brandon St. Irrigon OR.	541-922-8485	calmulder@gmail.com	Cal
18	Shannon Mulder	860 Brandon St. Irrigon, OR	541-922-8985	s.roggow@gmail.com	S Mulder
19					
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Susan Geer Cross Exam Exhibit 305

Geer 305/20

Attachment 9 cont.

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	DANIEL Willitts	P.O. Box 166 North Powder, OR	541-898-2713	dlw844@hotmail	[illegible]
2	Brad Allen	48748 McCarty br Rd North Powder	541-962-9127	bradallen4030@hotmail	Brad Allen
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4	HEIDI WLODARCZYK	2401 8th ST, BAKER CITY OR	541-523-5904	comahei@yahoo.com	Heidi Wlodarczyk
5	Logan Allen	48748 McCarty bridge Rd North powder	541-519-0668	Logan allen@powdersd.org	Logan Allen
6	Bryson Allen	45043 Pocahontas Rd. Haines, OR 97833	541-519-9493	brysonallen15@gmail.com	Bryson Allen
7	Whitley Allen	45043 Pocahontas Rd Haines, OR 97833	541-962-5975	whitley1001@gmail.com	Whitley allen
8	Wendy Bingham	49775 Ellis Road, North Powder OR 97867	541-898-2374	binghamcattle@yahoo.com	Wendy Bingham
9	Jason Williams	65579 Wolf Creek Ln North Powder 97867	541-898-2405		[illegible]
10	Jeff Williams	48857 Hwy 30 North Powder	541-403-1208		J Williams
11	Jeanette Thompson	48363 Hwy 30 Haines OR	541-856-3765		Jeanette Thompson
12	Brent Thompson	48363 Hwy 30 Haines OR	541-856-3765		Brent Thompson
13	Dewey Thompson	36288 Carnahan Ln Richland OR 97870	(541) 910-[illegible]		[illegible]
14	Brandon Thompson	245 Millie Way Dayville OR 97825	541-792-0186	brandon.e.thompson@icloud.com	[illegible]
15	Charlotte Thompson	48363 Hwy 30 Haines OR	541-856-3305		Charlotte Thompson
16	ERIC DIXON	P.O.BOX 247 NORTH POWDER, OR 97867	541-519-7970		Eric Dixon
17	Linda Dixon	425 E St. North Powder	541-709-1045		Linda Dixon
18	BRYAN EUBANKS	525 3rd St. North Powder	541-898-2614		B Eubanks
19	Taylin Espinoza	535 5th St North Powder	541-519-5079		Taylin Espinoza
20	Calvin Tucker	64125 Greiner Ln LaGrande	541-786-8252		[illegible]

Susan Geer Cross Exam Exhibit 305

Geer 305/21

Attachment 9 cont.

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route~~ then proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Jeff Lathrop	914 South 4th Union	962-4601	jwl@oregonwireless.net	[illegible]
2	LEON LUND	10503 W 4th LaGrande	963-7004		[illegible]
3	Jill Billman	534 N 11th St Union	910-8966		Jill Billman
4	RICH WASSON	1002 DOGWOOD ELGIN	962-5489		Richard Wasson
5	Sally Thompson	P.O. Box 4 Elgin	534-5822		Sally Thompson
6	Randy Thompson	P.O. Box 4 Elgin	534-5822		Randy Thompson
7	Jeff George	P.O Box 185 North Powder	898-2025		JEFF GEORGE
8	Kelly Seel	49271 Foothill Rd North Powder OR	786-5553	seel67@gmail	[illegible]
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10	Melissa Brown	PO BOX 81 Haines, OR 97833	5415193638		Melissa Brown
11	Emily Bingham	49980 Ellis Road N. Powder OR 97867	541-898-0048		[illegible]
12	Shari Selander	1000 F Street Baker City OR 97814	541-503-7413	sselander@ndninc.org	Shari Selander
13	June Allen	48748 McCarty Bridge R N. Powder	541-856-3358	Union Co.	[illegible]
14	Justin Bingham	49980 Ellis Rd N. Powder OR 97867	541-898-0048	[illegible]@gmail.com	[illegible]
15	Eric Ashbaker	13851 Loenning Ln Haines, OR 97833	5094200579	eashbaker1@gmail.com	[illegible]
16	Cynthia Cole	13851 Loenning Ln Haines OR 97833	541 969 7247	ccole[illegible]@gmail.com	Cynthia Cole
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18					
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Susan Geer Cross Exam Exhibit 305

Geer 305/22

Attachment 9 cont

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Chris Arvidson	48387 McCarty Bridge Rd NP Oregon	208 850 8957	chris.arvidson@williams.com	
2	Robert Stephens	46457 Stephens Rd Haines Ore	910 0788		Robert D Stephens
3	Roy Tidwell	13596 S. Rock Cr. Ln	519-5659	tidwell10@yahoo.com	
4	Ben Tidwell	13596 S. Rock Cr. Ln.	975-4552	btidwell1001@gmail.com	Ben Tidwell
5	Allen Hack	44821 Pocahontas Rd	541-519-8167	allenh97833@yahoo.com	
6	Matt Lish	2125 East Street	541-888-0802	N/A	
7					

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Josh Anderson	13993 S. Rock Creek Haines, OR 97833	541-805-9650	Scout742@yahoo.com	
2	Colby Thompson	51608 Bagwell Ln North Powder OR 97867	541-910-0006	TLazyTfarm@Gmail.com	
3	Delbert Stephens	46226 Rk Ck Tun Rd Haines OR 97833	541-910-1001	Farmerdel @ Gmail	
4	Erin Thompson	51608 Bagwell Rd North Powder OR 97867	541-910-0008	ethompson-02@hotmail.com	
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Attachment 9 cont.

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Richard Huck	512 Division Ave	963-3456	RRHuck@Frontier.com	Richard Huck
2	Jessica Huck	512 Division Ave, LaGrande	963.3456	rrhuck@Frontier.com	Jessica L. Huck
3					

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
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2					
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Sheet1 Sheet2 Sheet3

Susan Geer Cross Exam Exhibit 305

Geer 305/24

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February 16, 2022

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
Filing Center
P.O. Box 1088
201 High Street S.E., Suite 100
Salem, OR 97308-1088

Re: Docket LC 78 - Idaho Power Company's 2021 Integrated Resource Plan Appendix D and Errata

Attention Filing Center:

Attached for electronic filing is Appendix D to Idaho Power Company's (Idaho Power or Company) 2021 Integrated Resource Plan (IRP), which the Company had stated would be filed in the first quarter of 2022. Additionally, the Company submits for electronic filing eight (8) replacement pages with corrected portfolio cost information. As explained and demonstrated below, these portfolio cost updates are immaterial in nature, do not impact the selection of the Preferred Portfolio, and do not adjust any of the portfolio rankings in the 2021 IRP.

Appendix D

Appendix D of Idaho Power's 2021 IRP includes updates on the Boardman to Hemingway (B2H) project, including explanation of the finalized term sheet signed by Idaho Power, PacifiCorp, and Bonneville Power Administration. Idaho Power previously filed the term sheet in this docket on January 19, 2022.

In addition to updates and analysis related to the B2H project, Appendix D provides information on Idaho Power's transmission system, how it is modeled in the IRP, and the modeling and status of other potential transmission projects, such as Gateway West.

Replacement Pages

In addition to Appendix D, Idaho Power is filing eight (8) replacement pages to the main 2021 IRP report. In the process of organizing IRP data files during completion of Appendix D, Idaho Power identified two separate data discrepancies related to Bridger Plant cost estimates. These updates result in immaterial cost changes to portfolios in the 2021 IRP.

The first data issue arose because of the timing of revised estimates received by the Company for costs related to the early exit of the Bridger Plant units. Idaho Power continued to receive updated cost estimates throughout December 2021. To determine portfolio costs in the IRP, Idaho Power inadvertently used the penultimate set of cost estimates rather than the final cost estimates. For portfolios in which any of the Bridger units are exited before end of book life, the revised costs increase the net present value (NPV) of portfolios by between $4 and $6 million—an increase of between 0.041 percent to 0.077 percent. This portfolio cost increase is de minimis in relation to total portfolio costs of approximately $8 billion, and does not change the selection of the Preferred Portfolio, nor does it change any of the portfolio rankings or sensitivity outcomes.

The second data issue, related to cost estimates for the Bridger Plant natural gas conversion, was due to the inadvertent exclusion of fixed operations and maintenance (O&M) costs associated with the conversion in IRP portfolio cost development. The IRP planning team believed these costs were accounted for in Idaho Power's internal finance (p-worth) model. However, due to the newness of Bridger Plant conversion discussions, this cost stream had not yet been incorporated into the p-worth. These fixed O&M costs add between approximately $12-23 million to total NPV portfolio costs in the IRP—a cost increase of between 0.2 percent to 0.3 percent to portfolios and sensitivities in which either unit 1 or 2 is converted to natural gas. Similar to the issue above, this increase is immaterial to the IRP analysis, does not change the selection of the Preferred Portfolio, and has no impact on portfolio rankings or sensitivity outcomes.

Combined, these corrected data issues result in NPV portfolio cost increases of between $5 million and $29 million on total NPV portfolio costs of approximately $8 billion—an increase of *less than half of 1 percent* on affected portfolios. The table below compares the NPV of a selection of portfolio costs as originally published compared to the amended amounts included in the replacement pages. As the table demonstrates, the portfolio cost increases resulting from these two issues do not change any aspect of Preferred Portfolio selection or portfolio rankings.

2021 IRP portfolios, NPV years 2021–2040 ($ x 1,000)

Portfolio	ORIGINAL Planning Gas, Planning Carbon	UPDATED Planning Gas, Planning Carbon	Total Percentage Increase
Base with B2H	$7,915,702	$7,942,428	0.34%
Base B2H PAC Bridger Alignment	$7,999,347	$8,021,906	0.28%
Base without B2H	$8,192,830	$8,219,281	0.32%
Base without B2H without Gateway West	$8,441,414	$8,470,101	0.34%
Base without B2H PAC Bridger Alignment	$8,185,334	$8,207,893	0.28%
Base with B2H—High Gas High Carbon Test	$7,997,339	$8,024,064	0.33%

Idaho Power is committed to identifying and correcting issues in a straightforward and transparent manner. To this end, the Company provides this update to ensure the Commission and stakeholders are operating with the latest and most accurate information. Idaho Power believes its thorough quality control process brought to light these minor issues and allowed for a timely correction.

Please contact this office with any questions.

Respectfully submitted,

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McDowell Rackner Gibson PC
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FEBRUARY • 2022

2021 IRP
INTEGRATED RESOURCE PLAN

A VIEW
FROM ABOVE

APPENDIX D: TRANSMISSION SUPPLEMENT

SAFE HARBOR STATEMENT

This document may contain forward-looking statements, and it is important to note that the future results could differ materially from those discussed. A full discussion of the factors that could cause future results to differ materially can be found in Idaho Power's filings with the Securities and Exchange Commission.

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EXECUTIVE SUMMARY

Idaho Power Company (Idaho Power or the company) developed *Appendix D–Transmission Supplement* to detail many of the transmission cost and modeling assumptions utilized in the 2021 Integrated Resource Plan (IRP), as well as discuss other details related to transmission. The primary focus of *Appendix D* will continue to be the Boardman to Hemingway Transmission Line (B2H) project.

2021 IRP B2H Project Update

The B2H project is moving into the preliminary construction phase of the project. On January 18, 2022, after significant discussions, study efforts, and negotiations, the three B2H permit funding parties, Idaho Power, PacifiCorp (PAC), and Bonneville Power Administration (BPA), executed a Non-Binding Term Sheet that addresses B2H ownership, transmission service considerations, and asset exchanges. The parties entered into this Term Sheet after 1) jointly funding the permitting of the B2H project over the past decade, and 2) over two years of discussions related to next steps associated with the B2H project. Since signing the B2H Permit Funding Agreement in 2012, a decade has passed, and the parties' capacity needs, strategies, and goals associated with the project have shifted. The three parties negotiated the Term Sheet as the framework for future agreements required between and among the parties.

As part of the Term Sheet, BPA will transition out of its role as a joint B2H permitting partner and will instead take transmission service from Idaho Power to serve its southeast Idaho customers. Idaho Power will increase its B2H ownership to 45.45% by acquiring BPA's planned share of B2H capacity. Idaho Power's B2H capacity will increase from an average of 350 megawatts (MW) west-to-east to 750 MW west-to-east, and Idaho Power will utilize a portion of its increased B2H capacity to provide BPA transmission service across southern Idaho.

As part of the larger transaction, Idaho Power and PAC plan to complete an asset exchange to align transmission ownership with each party's long-term strategy. Idaho Power will acquire PAC transmission assets and their related capacity sufficient to enable Idaho Power to utilize 200 MW of bidirectional transmission capacity between the Idaho Power system (Populus) and Four Corners substation in New Mexico. Idaho Power will also acquire PAC assets around the Goshen area necessary to provide transmission service to BPA to serve its southeast Idaho customers. PAC will acquire Idaho Power transmission assets and their related capacity sufficient to enable PAC to utilize 600 MW of east-to-west and 300 MW of west-to-east transmission capacity across southern Idaho.

In the 2021 IRP, Idaho Power estimates that its 45.45% share of B2H costs will be approximately $500 million (with no contingency) and evaluated a high-end cost of $600 million with a 30%

cost contingency for future expenses. The B2H cost estimate included Idaho Power's costs for local interconnection upgrades totaling approximately $35 million and additional system upgrades totaling approximately $47 million.

B2H Background and Purpose

B2H is a planned 500 kilovolt (kV) transmission project that will span between the Hemingway 500 kV substation near Melba, Idaho, and the proposed Longhorn Station near Boardman, Oregon. Once operational, B2H will provide Idaho Power increased access to reliable, low-cost market energy purchases from the Pacific Northwest year-round, including when energy demand from Idaho Power's customers is at its highest. B2H has been a cost-effective resource identified in each of Idaho Power's IRPs since 2009 and continues to be a cornerstone of Idaho Power's 2021 IRP Preferred Portfolio. In the 2021 IRP, as has been the case in prior IRPs, the B2H project is not simply evaluated as a transmission line, but rather as a *resource* that will be used to serve Idaho Power load. That is, the B2H project, and the market purchases it will facilitate, is evaluated in the same manner as a new gas plant, or a new utility-scale solar plus storage project.

As a resource, the B2H project is demonstrated to be the most cost-effective method of serving projected customer demand. As can be seen in the 2021 IRP, the lowest-cost resource portfolio includes B2H, and the best non-B2H portfolio has a significant cost premium. As a resource alone, B2H is the lowest-cost alternative to serve Idaho Power's customers in Oregon and Idaho. As a transmission line, B2H also offers incremental ancillary benefits and additional operational flexibility.

In addition to being the least-cost resource to meet Idaho Power's resource needs, the B2H project received national recognition for the benefits it will provide. The B2H project was selected by the Obama administration as one of seven nationally significant transmission projects that, when built, will help increase electric reliability, integrate new renewable energy into the grid, create jobs, and save consumers money. B2H was also acknowledged as complementing the Trump Administration's America First Energy Plan, which addresses all forms of domestic energy production. In a November 17, 2017, United States Department of the Interior press release,[1] B2H was held up as a "priority focusing on infrastructure needs that support America's energy independence." The release went on to say, "This project will help stabilize the power grid in the Northwest, while creating jobs and carrying low-cost energy to the families and businesses who need it." Finally, B2H was identified by Americans for a Clean Energy Grid as one of 22 high-voltage transmission projects that "could interconnect around 60,000 MW of new renewable capacity, increasing America's wind and solar generation by

[1] blm.gov/press-release/doi-announces-approval-transmission-line-project-oregon-and-idaho

nearly 50% from current levels.[2]" The benefits B2H is expected to bring to the region and nation have been recognized across both major political parties.[3]

Idaho Power is the project manager for the permitting phase of the B2H project. The B2H project achieved a major milestone nearly ten years in the making with the release of the Bureau of Land Management (BLM) Record of Decision (ROD) on November 17, 2017, approving a right-of-way for the B2H project on BLM-administered land. Idaho Power also received a ROD for B2H from the United States Forest Service in 2018 and from the United States Navy in 2019. In 2021, the RODs issued by the BLM and the Forest Service were upheld by the United States District Court for the District Court of Oregon. No parties appealed that ruling.

For the State of Oregon permitting process, Idaho Power submitted the amended application for Site Certificate to the Oregon Department of Energy (ODOE) in the summer of 2017. ODOE issued a Proposed Order on July 2, 2020, that recommends approval of the project to Oregon's Energy Facility Siting Council (EFSC). Currently, EFSC is conducting a contested case proceeding on the Proposed Order. EFSC is tasked with establishing siting standards for energy facilities in Oregon and ensuring certain transmission line projects, including B2H, meet those standards.[4] Before Idaho Power can begin construction on B2H, it must obtain a Site Certificate from EFSC. The Oregon EFSC process is a standards-based process based on a fixed site boundary. For a linear facility, like a transmission line, the process requires the transmission line boundary be established (a route selected) and fully evaluated to determine if the project meets established standards. Idaho Power must demonstrate a need for the project before EFSC will issue a Site Certificate authorizing the construction of a transmission line (non-generating facility). Idaho Power's demonstration of need is based in part on the least-cost plan rule, for which the requirements can be met through a commission acknowledgement of the resource in the company's IRP.[5] The Oregon Public Utility Commission (OPUC) has already acknowledged the construction of B2H in Idaho Power's 2017 IRP and 2019 IRP. In this case, Idaho Power again seeks to confirm its acknowledgement of B2H as reflected in the 2021 IRP.

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[2] See https://cleanenergygrid.org/wp-content/uploads/2021/09/Transmission-Projects-Ready-to-Go.pdf.

[3] The importance of high-voltage transmission to a decarbonized future continues to receive attention from experts and scholars alike. In 2021, Princeton University published the Net-zero America Report, which asserts that the United States will need to expand its high voltage transmission system by 60% by 2030, and may need to triple it by 2050 to meet net zero futures. https://www.dropbox.com/s/ptp92f65lgds5n2/Princeton%20NZA%20FINAL%20REPORT%20(29Oct2021).pdf?dl=0

[4] See generally Oregon Revised Statute (ORS) 469.300-469.563, 469.590-469.619, and 469.930-469.992.

[5] OAR 345-023-0020(2). Idaho Power is also requesting satisfaction of the need standard under EFSC's System Reliability Rule, OAR 345-023-0030.

As of the date of this report, Idaho Power expects ODOE to issue its decision on the Site Certificate in 2022. To achieve a 2026 in-service date, as shown in the near-term Action Plan, preliminary construction activities have commenced in parallel to EFSC permitting activities. Preliminary construction activities include, but are not limited to: geotechnical explorations, detailed ground surveys, sectional surveys, right-of-way (ROW) option acquisition activities, detailed design, and construction bid package development. After the Oregon permitting process and preliminary construction activities conclude, construction activities can commence.

Gateway West Considerations in the 2021 IRP

In the 2021 IRP, Idaho Power performed extensive evaluations on the Gateway West project. The project was ultimately not included as part of the 2021 IRP Preferred Portfolio; however, many portfolios, including most portfolios that did not include B2H, identified at least one phase of Gateway West as being necessary to facilitate the large renewable buildouts required. Idaho Power expects that resource development in southern Idaho by the company, or other third-party's, and geographically diverse resource adequacy needs will drive the need for Gateway West in the coming years. The company will continue to evaluate Gateway West in future IRPs.

Existing Transmission Utilized for Firm Imports

As detailed in the 2021 IRP Report Chapter 11–Transmission Market Shifts and Constraints, Idaho Power has reduced the *existing* transmission assumed available for market purchases within the Load and Resource Balance from approximately 900 MW in the 2019 IRP to approximately 710 MW in the 2021 IRP during the peak-load month of July.

The company decreased this availability due to transmission constraints and the company's decreasing ability to access markets. Since the August 2020 energy emergency event in California, the Idaho Power transmission service queue has been flooded with multi-year requests totaling more than 1,000 MW as of April 2021, looking to move energy from the Mid-Columbia market (Mid-C) across Idaho Power's transmission system to the south.

While the company is able to reserve its own transmission for use by its customers, the transmission service requests just outside of Idaho Power's service area have placed additional pressure on an already constrained market, limiting the company's access to capacity at Mid-C. The company also began to secure long-term rights across other transmission providers, and by summer 2023, the company will have added 380 MW of long-term firm transmission rights across third-party systems to the company's border. The company sought to purchase more additional firm transmission capacity, but it was not available. These 380 MW, in addition to the company's 330 MW emergency transmission capacity (capacity benefit margin), account for the 710 MW available for July market purchases across existing transmission in the 2021 IRP.

More information about existing transmission availability assumptions can be found in the Transmission Capacity Between Idaho Power and the Pacific Northwest section of this appendix.

2022 TERM SHEET AND B2H PROJECT PARTNER UPDATE

The 2022 B2H Term Sheet and the 2021 IRP

The B2H Term Sheet items reflected below were all factored into the development and execution of Idaho Power's 2021 IRP.

B2H Related Terms

The B2H project is moving into the preliminary construction phase. On January 18, 2022, and after significant discussions, study efforts, and negotiations, the three B2H permit funding parties, Idaho Power, PAC, and BPA, executed a Non-Binding Term Sheet that addresses B2H ownership, transmission service considerations, and asset exchanges. The parties entered into this Term Sheet after 1) jointly permitting the B2H project over the past decade, and 2) over two years of discussions related to next steps associated with the B2H project. A decade has passed since signing of the B2H Transmission Project Joint Permit Funding Agreement in 2012, and the parties' capacity needs, strategies, and goals associated with the project have shifted. The three parties negotiated the Term Sheet as the framework for future agreements required between and among the parties.

Per the Term Sheet, BPA will transition out of its role as a joint B2H permit funding coparticipant and will instead rely on B2H by taking transmission service from Idaho Power to serve its customers. To accommodate this change, Idaho Power will increase its B2H ownership share to 45.45% by acquiring BPA's B2H capacity. Idaho Power's B2H capacity will increase from an average of 350 MW west-to-east to 750 MW west-to-east and Idaho Power will utilize a portion of its increased B2H capacity to provide BPA network transmission service across southern Idaho.

PAC's B2H interest is not impacted by BPA transitioning out of the project and their B2H capacity will remain at 300 MW west-to-east and 600 MW east-to-west.

There remains 400 MW of unallocated B2H east-to-west capacity.

Idaho Power and BPA Terms

B2H Development Risk: The Term Sheet reflects BPA's intent to transition out of its role as a joint B2H permitting partner and to rely on the completed B2H project to take transmission service from Idaho Power to serve its customers in southeast Idaho. The Term Sheet adjusts the funding and ownership percentages as follows:

- In addition to its current 21% ownership, Idaho Power will assume BPA's 24% ownership share in B2H; and Idaho Power will provide transmission service across southern Idaho to BPA's customers through Network Integration Transmission Service Agreements

(NITSA) under Idaho Power's Open Access Transmission Tariff. These NITSAs will remain in effect for a minimum 20-year period.

- In concert with the NITSAs, Idaho Power will acquire BPA's B2H permitting interest and, on a going-forward basis, will fund 45% of B2H project development costs for permitting and pre-construction. In the event Idaho Power is unable to secure B2H permits or state Certificates of Public Convenience and Necessity, BPA will compensate Idaho Power for 24% (based on BPA's funding obligations before the transfer of BPA's permitting interest to Idaho Power) of the permitting and preconstruction costs incurred after BPA's interest transfers to Idaho Power.

Permitting Cost Reimbursement: In concert with the NITSAs, starting ten years after B2H is placed in service, Idaho Power will reimburse BPA for the value of the permitting costs paid by BPA. Interest will accumulate on the permitting balance starting on the B2H in-service date.

BPA Wheeling Revenue will Offset BPA Related Costs: BPA's transmission service payments to Idaho Power under the NITSAs will offset Idaho Power's costs associated with BPA's usage of the B2H project over time, and, therefore, Idaho Power's customers will not be harmed by the changes to the arrangement.

Idaho Power Wheeling Across BPA Transmission: In a related transaction, Idaho Power will secure 500 MW of point-to-point transmission service (PTP) from BPA from the Mid-Columbia market (Mid-C) to the proposed Longhorn Station, which will provide Idaho Power a direct connection to the Mid-C market with flexible long-term BPA wheeling rights.

Longhorn Station Terms

The B2H project will interconnect with the proposed BPA Longhorn Station near Boardman, Oregon, which BPA will own and operate. BPA is in the process of evaluating the construction of the proposed Longhorn Station to satisfy an interconnection request of a BPA customer and anticipates making a decision regarding its construction later in 2022.

Funding the Longhorn Station: Under the Term Sheet, BPA will fund Idaho Power's share, about $14 million, of the interconnection costs to the proposed Longhorn Station.

Funding of the B2H Connection to Longhorn: Idaho Power and PAC will fund assets and associated costs, to be reimbursed by BPA, that are required to directly connect B2H to the Longhorn Station. BPA will satisfy its reimbursement obligations to Idaho Power via transmission service credits associated with Idaho Power's 500 MW of PTP service across BPA from Mid-C to Longhorn Station.

Funding the B2H Series Capacitor at Longhorn: Idaho Power and PAC will fund and own the B2H series capacitor and associated equipment at Longhorn Station. Idaho Power and/or PAC will have access to the Longhorn Station to perform maintenance and inspections on jointly owned equipment in the Longhorn Station.

Idaho Power and PAC Terms

In addition to the transactions directly related to construction and operation of B2H, Idaho Power and PAC have agreed to exchange certain assets and take other actions as follows upon completion of B2H, conditioned on reaching definitive agreements:

Idaho Power Assets to be Acquired from PAC: Idaho Power will acquire PAC transmission assets and their related capacity sufficient to enable Idaho Power to utilize 200 MW of bidirectional transmission capacity between the Idaho Power system (Populus Substation in Idaho) and Four Corners Substation in New Mexico. Idaho Power will also acquire PAC assets around the Goshen, Idaho, area necessary to provide transmission service to BPA to serve their southeast Idaho customers.

PAC Assets to be Acquired from Idaho Power: PAC will acquire Idaho Power transmission assets and their related capacity sufficient to enable PAC to utilize 600 MW of east-to-west and 300 MW of west-to-east transmission capacity across southern Idaho.

PAC Point-to-Point Contracts: PAC will terminate its existing 510 MW of east-to-west transmission service across southern Idaho Power and acquire 300 MW of west-to-east conditional firm service. To achieve the 300 MW of west-to-east service, PAC will obtain (through reassignment) BPA's 200 MW of PTP west-to-east conditional firm service across southern Idaho. PAC has procured 100 MW of incremental west-to-east conditional firm service from Idaho Power across southern Idaho.

Additional Upgrades Required: Transmission capacity on the Idaho Power operated Borah West and Midpoint West transmission paths must be upgraded to support additional east-to-west schedules required by Idaho Power and PAC across southern Idaho. There are two system upgrade projects identified to reinforce Borah West and Midpoint West to enable these increased east-to-west transmission flows through Idaho:

1. Midpoint-Kinport 345 kV Series Capacitor Addition: The addition of a series capacitor on the existing Midpoint–Kinport 345 kV line will increase the Borah West path rating by approximately 500 MW. This series capacitor allows for more optimal distribution of flows on the existing 345 kV lines west of Borah Station near American Falls, Idaho.

2. Midpoint 500/345 kV Second Transformer Addition: The existing single 500/345 kV transformer bank is a bottleneck for increased flows across the Idaho system. A second 500/345 kV transformer will need to be installed to increase the capacity of the existing

Midpoint–Hemingway 500 kV line to accommodate higher east-to-west transfers across southern Idaho.

In the 2021 IRP, Idaho Power conservatively assumed that the full cost (about $47 million) of these upgrades will be funded by the company. The actual cost responsibility will be determined as Idaho Power and PAC perform detailed analysis associated with the asset exchange.

B2H Revised Scope–Midline Series Capacitor

Idaho Power and PAC will construct a B2H midline series capacitor substation around the mid-point of the B2H transmission line. This midline series capacitor—identified through joint planning studies by Idaho Power, PAC, and BPA—is required to address interactions between B2H and other existing transmission paths and to meet the three parties' needs. This midline substation was not included in the original project scope and will require additional permitting. It is anticipated that this additional permitting will not delay the B2H in-service date.

IDAHO POWER'S TRANSMISSION SYSTEM

Idaho Power's transmission system is a critical component of Idaho Power's system enabling Idaho Power to provide reliable and fair-priced energy services. A map of Idaho Power's transmission system is shown in Figure 7.1 of the 2021 IRP and in Figure 1 of this appendix. Transmission lines facilitate the delivery of economic resources and allow resources to be sited where most cost effective. In most instances, the most economic/best location for resources is not immediately next to major load centers (i.e., hydro along the Snake River, wind in Wyoming, solar in the Desert Southwest). For much of its history, Idaho Power has relied upon resources outside of its major load pockets to economically serve its customers. The existing transmission lines between Idaho Power and the Pacific Northwest have been particularly valuable. Idaho Power fully utilizes the capacity of these lines. Additional transmission capacity is required to access resources to serve incremental increases in peak demand. The B2H project is the mechanism to increase capacity between the Pacific Northwest and Idaho Power's service area.

Transmission lines are constructed and operated at different operating voltages depending on purpose, location and distance. Idaho Power operates transmission lines at 138 kV, 161 kV, 230 kV, 345 kV, and 500 kV. Idaho Power also operates sub-transmission lines at 46 kV and 69 kV. The higher the voltage, the greater the capacity of the line, but also greater construction cost and physical size requirements.

The utility industry often compares transmission lines to roads and highways. Typically, lower-voltage transmission lines (such as 138 kV) are used to facilitate delivery of energy to substations to serve load, like a two-lane highway, while high-voltage transmission lines are used for bulk transfer of energy from one region to another, like an interstate highway. Much like roads and highways, transmission lines can become congested. Depending on the capacity needs, economics, distance, and intermediate substation requirements, either 230 kV, 345 kV, or 500 kV transmission lines are chosen.

Transmission Market Shifts and Constraints

As discussed in the Transmission Market Shifts and Constraints section of Chapter 11 of the 2021 IRP, starting on page 168, the company made significant adjustments to its transmission availability assumptions.

As a result of recent and significant market changes, for the years 2023 through 2025, Idaho Power has reduced the transmission availability within the Load and Resource Balance from approximately 900 MW in the 2019 IRP to approximately 710 MW in the 2021 IRP during the peak-load month of July. The following sections detail the makeup of this 710 MW.

Idaho Power's Existing Transmission Capacity

A transmission path is one or more transmission lines that collectively transmit power to and from one geographic area to another.

Idaho to Northwest Path Description

Idaho Power owns 1,280 MW of transmission capacity between the Pacific Northwest transmission system and Idaho Power's transmission system. Of this capacity, 1,200 MW are on the Idaho to Northwest path (Western Electricity Coordinating Council [WECC] Path 14), and 80 MW are on the Montana–Idaho path (WECC Path 18). The Idaho to Northwest transmission path is comprised of three 230 kV lines, one 500 kV line, and one 115 kV line. The capacity limit on the path is established through a WECC rating process based on equipment overload ratings resulting from the loss of the most critical element on the transmission system. Collectively, these lines between Idaho and the Northwest have a transfer capacity rating that is greater than the individual rating of each line but less than the sum of the individual capacity ratings of each line. Figure 1 shows an overview of Idaho Power's high-voltage transmission system.

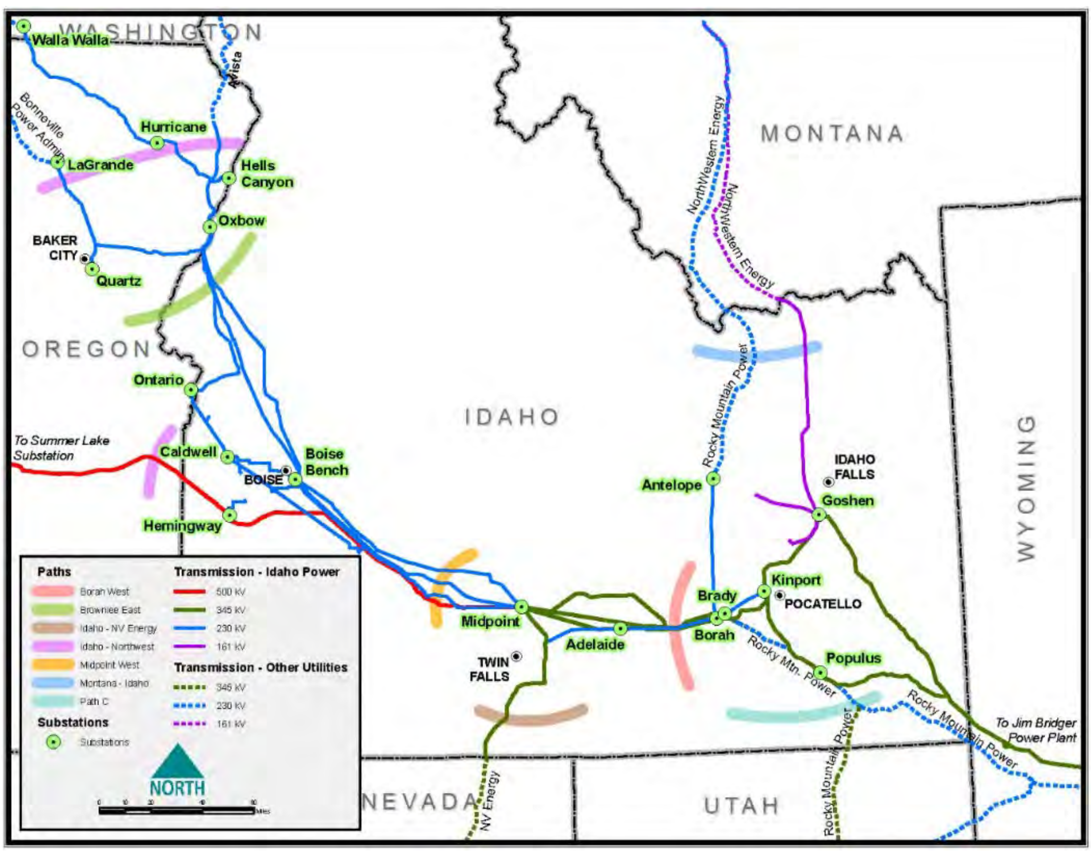


Figure 1. **Idaho Power transmission system map**

Table 1 details the capacity allocation between the Pacific Northwest and Idaho Power in 2021. The shaded rows represent capacity amounts that can be used to serve Idaho Power's native load customers, although Capacity Benefit Margin (CBM) can only be accessed as firm capacity if Idaho Power is in an energy emergency.

Table 1. Pacific Northwest to Idaho Power west-to-east transmission capacity

Firm Transmission Usage (Pacific Northwest to Idaho Power)	Capacity (July MW)
BPA Load Service (Network Customer)	332
Fighting Creek (PURPA)	4
Transmission Reliability Margin (TRM)	281
Capacity Benefit Margin (CBM)	330
Subtotal	**947**
Pacific Northwest Purchase (Idaho Power Load Service)	333
Total	**1,280**

Montana–Idaho Path Utilization

Idaho Power's share of the Montana–Idaho path includes 80 MW of capacity on a 230 kV line interconnecting with BPA or Avista and a 161 kV line interconnecting with Northwestern Energy. The 161 kV line is not included in the total Pacific Northwest to Idaho Power import capacity due to commercial constraints beyond the Idaho Power border. To utilize the 80 MW capacity connection, Idaho Power must purchase transmission service from either Avista or BPA. This transmission system connects the purchased resource in the Pacific Northwest to Idaho Power's transmission system. Avista or BPA transmits, or wheels, the power across their transmission system and delivers the power to Idaho Power's transmission system. The Montana–Idaho path is identified in Figure 1 above.

Idaho to Northwest Path Utilization

To use Idaho Power's share of the Idaho to Northwest capacity, Idaho Power must purchase transmission service from Avista, BPA, or PAC. Table 2 details a typical summer allocation of the Idaho to Northwest capacity:

Table 2. The Idaho to Northwest Path (WECC Path 14) summer allocation

Transmission Provider	Idaho to Northwest Allocation (Summer West-to-East) (MW)
Avista (to Idaho Power)	340
BPA (to Idaho Power)	350
PAC (to Idaho Power)	510
Total Capability to Idaho Power	**1,200***

* During times of very low generation at Brownlee, Oxbow, and Hells Canyon hydro plants, the Idaho to Northwest path total capability can increase to as much as 1,340 MW; low generation at these power plants does not correspond with Idaho Power's system peak.

Avista, BPA, and PAC share an allocation of capacity on the western side of the Idaho to Northwest path, and Idaho Power owns 100% of the capacity on the eastern side of the Idaho to Northwest path. For Idaho Power to transact across the path and serve customer load, Idaho Power's Load Servicing Operations must purchase transmission service from Avista, BPA, or PAC to connect the selling entity, via a contract transmission path, to Idaho Power.

Construction of B2H will add 1,050 MW of capacity to the Idaho to Northwest path in the west-to-east direction, of which Idaho Power will own 750 MW and plans to utilize 500 MW the summer months (April–September) and 200 MW in the winter months (January–March and October–December) for Idaho Power customer service. The remainder of the Idaho Power capacity will mainly be used for incremental network transmission service to BPA southeast Idaho customers. A total breakdown of capacity rights of the B2H permitting coparticipants can be found in the B2H Capacity Interest section of this report. The Idaho to Northwest path is identified in Figure 1 above.

Transmission Capacity to the South

Referencing Figure 1, the company owns or controls transmission capacity between utilities in the south, and Idaho Power via the Idaho–NV Energy path (aka Idaho–Sierra path or WECC Path 16) and Path C (WECC Path 20).

Idaho Power utilizes the Idaho–NV Energy path to import Valmy energy, and the path rating is 360 MW in the south-to-north direction. There is no firm transmission availability across Nevada to leverage this 360 MW of import capacity to access Desert Southwest markets.

PAC is the owner and operator of the Path C transmission lines. Idaho Power has secured 50 MW of transmission capacity between the months of June and October to access the Desert Southwest markets. This 50 MW makes up a part of the 2021 IRP's approximately 710 MW of transmission capacity detailed in the Load and Resource Balance.

Transmission in the 2021 IRP Load and Resource Balance

Due to the market shifts referenced in the Transmission Market Shifts and Constraints section, transmission capacity has been constrained. Table 3 details the amount of Mid-C to Idaho Power and Desert Southwest to Idaho Power capacity to which the company will have rights by 2023.

Table 3. Third-party secured import transmission capacity

Third-Party Provider	Market	Capacity (MW)
Avista via Lolo	Pacific Northwest	200
PAC via Walla Walla	Pacific Northwest	80
BPA via La Grande	Pacific Northwest	50
PAC via Red Butte (Utah/Nevada border)	Desert Southwest	50
Subtotal		**380**
Emergency Transmission (CBM)	Pacific Northwest	330
Total		**710**

The B2H project will add 750 MW of Idaho Power owned transmission capacity between BPA and Idaho Power. Additionally, Idaho Power plans to secure 500 MW of point-to-point transmission service across BPA's transmission system to connect B2H to the Mid-C market hub. As part of the Term Sheet, Idaho Power will also acquire from PAC 200 MW of south-to-north transmission ownership from the Desert Southwest market hub (Four Corners) to the Idaho Power system. However, Idaho Power did not specifically allocate any incremental summer capacity associated with the Four Corners capacity into the Load and Resource Balance.

More Details Related to CBM: CBM is transmission capacity Idaho Power sets aside on the company's transmission system, as unavailable for firm use, for the purposes of accessing reserve energy to recover from severe conditions such as unplanned generation outages or energy emergencies. Reserve generation capacity is critical and CBM allows a utility to reduce the amount of reserve generation capacity on its system by providing transmission availability to another market, in this case the Pacific Northwest. An energy emergency must be declared by Idaho Power before the CBM transmission capacity becomes firm. To access the market, transmission beyond Idaho Power on third party providers must be acquired. The company anticipates this third-party transmission will be available during an energy emergency event. Idaho Power includes the 330 MW of emergency transmission (CBM) toward meeting a 15.5% planning margin. In future IRP's, Idaho Power will continue to evaluate how CBM applies in the context of Idaho Power's Load and Resource Balance, specifically if the company is a member of a regional resource adequacy program.

More Details Related to TRM: TRM is transmission capacity that Idaho Power sets aside as unavailable for firm use, for the purposes of grid reliability to ensure a safe and reliable transmission system. Idaho Power's TRM methodology, approved by the Federal Energy Regulatory Commission (FERC) in 2002, requires Idaho Power to set aside transmission capacity based on the average loop flow on the Idaho to Northwest path. In the west, electrical power is scheduled through a contract-path methodology, which means if 100 MW is purchased and scheduled over a path, that 100 MW is decremented from the path's total availability. However, physics dictates the actual power flow over the path (based on the path of least resistance), so actual flows don't equal contract-path schedules. The difference between scheduled and actual flow is referred to as unscheduled flow or loop flow. The average adverse loop flow across the Idaho to Northwest path during the month of July is 281 MW.

Regional Planning—Studies and Conclusions

Idaho Power is active in NorthernGrid, a regional transmission planning association of 13 member utilities. The NorthernGrid was formed in early 2020. Previously, dating back to 2007, Idaho Power was a member of the Northern Tier Transmission Group. NorthernGrid operates in compliance with FERC Orders 890 and 1000.

NorthernGrid membership includes Avista, Berkshire Hathaway Energy Canada, BPA, Chelan County Public Utility District (PUD), Grant County PUD, Idaho Power, NorthWestern Energy, NV Energy, PAC (Rocky Mountain Power and Pacific Power), Portland General Electric, Puget Sound Energy, Seattle City Light, Snohomish County PUD, and Tacoma Power. Biennially, NorthernGrid will develop a regional transmission plan using a public stakeholder process to evaluate transmission needs resulting members' load forecasts; local transmission plans; IRPs; generation interconnection queues; other proposed resource development and forecast uses of the transmission system by wholesale transmission customers. The 2020–2021 regional transmission plan was published in December 2021 and can be found in the NorthernGrid website: northerngrid.net.

B2H is a regionally significant project; it was identified as a key transmission component of each Northern Tier Transmission Group biennial regional transmission plan for 10 years 2010–2019. The B2H project is similarly a major component of the 2020–2021 NorthernGrid regional transmission plan, published in December 2021[6]. Regional transmission planning efforts are widely regarded as producing efficient and cost-effective pathways to meet the load and resource needs of a region.

[6] See https://www.northerngrid.net/private-media/documents/2020-2021_Regional_Transmission_Plan.pdf

B2H DEVELOPMENT

For details related to B2H project history, public participation, project activities, route history, and a detailed list of notable project milestones, please reference Appendix D-2 at the end of this Appendix.

B2H Design

B2H is routed and designed to withstand catastrophic events, including, but not limited to, the following:

- Lightning
- Earthquake
- Fire
- Wind/tornado
- Ice
- Landslide
- Flood
- Direct physical attack

The following sections provide more information about the design of the B2H transmission line and address each of the catastrophic events listed above.

Transmission Line Design

The details below are not inclusive of every design aspect of the transmission line but provide a brief overview of the design criteria. The B2H project will be designed and constructed to meet or exceed all required safety and reliability criteria.

The basic purpose of a transmission line is to move power from one substation to another for eventual distribution of electricity to end users. The basic components of a transmission line are the structures/towers, conductors, insulators, foundations to support the structures, and shield wires to prevent lighting from striking conductors. See Figure 2 for a cross-section of a transmission line.

For a single-circuit transmission line, such as B2H, power is transmitted via three-phase conductors (a phase can also have multiple conductors, called a bundle configuration). These conductors are typically comprised of a steel core to give the conductor tensile strength and reduce sag and of aluminum outer strands. Aluminum is used because of its high conductivity to weight ratio.

Shield wires, typically either steel or aluminum and occasionally including fiber optic cables inside for communication, are the highest wires on the structure. Their main purpose is to protect the phase conductors from a lightning strike.

Structures are designed to support the phase conductors and shield wires and keep them safely in the air. For the B2H project, structures were chosen to be primarily steel lattice tower structures, which provide an economical means to support large conductors for long spans over long distances.[7] The typical structure height for B2H is approximately 135 feet tall (structure height will vary depending on location) with a structure located roughly every 1,400 feet on average. The tower height and span length were optimized to minimize ground impacts and material requirements; taller structures could allow for longer spans (fewer structures on average per mile) but would be costlier due to material requirements. Again, the B2H tower and conductors were engineered to maximize benefits and minimize costs and impacts.

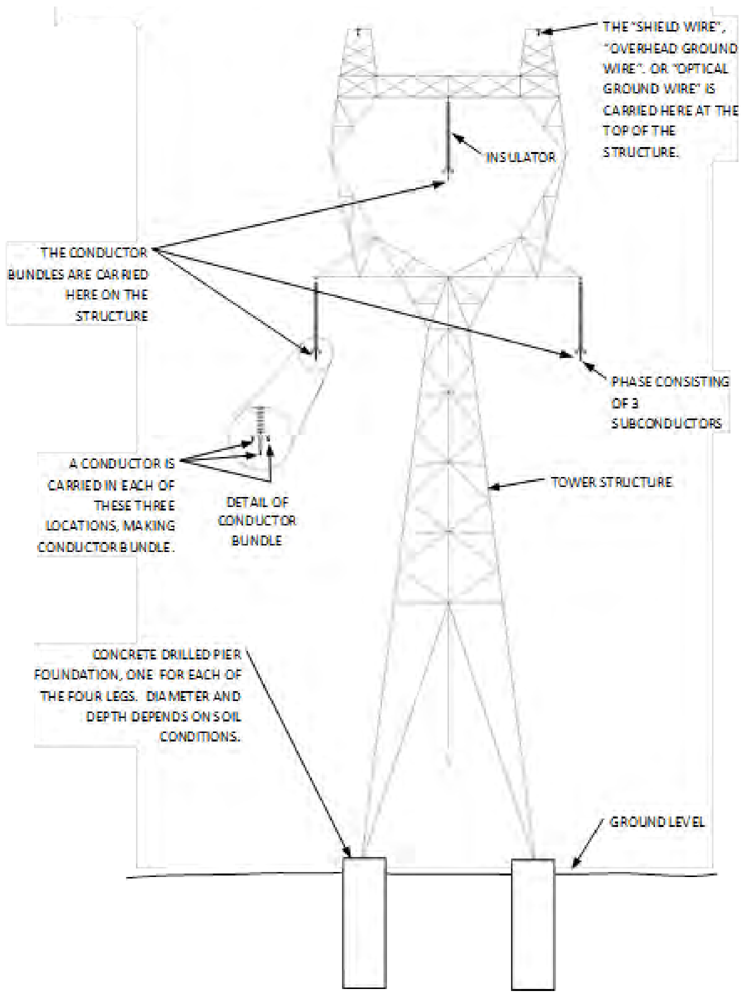


Figure 2. Transmission tower components

Transmission Line Structural Loading Considerations

Reliability and resiliency are designed into transmission lines. Overhead transmission lines have been in existence for over 100 years, and many codes and regulations govern the design and operation of transmission lines. Safety, reliability, and electrical performance are all incorporated into the design of transmission lines. Idaho Power's Energy Facility Siting

[7] H-frame towers, rather than lattice towers, will be used in certain locations to mitigate scenic impacts.

Council (EFSC) application includes an exhaustive list of standards. Several notable standards are as follows:

- American Concrete Institute 318—*Building Code Requirements for Structural Concrete*
- American National Standards Institute (ANSI) standards (for material specs)
- American Society of Civil Engineers (ASCE) Manual No.74—*Guidelines for Electrical Transmission Line Structural Loading*
- National Electrical Safety Code (NESC)
- Occupational Safety and Health Administration (OSHA) 1910.269 April 11, 2014 (for worker safety requirements)
- National Fire Protection Association (NFPA) 780—*Guide for Improving the Lightning Performance of Transmission Lines*

NESC provides for minimum guidelines and industry standards for safeguarding persons from hazards arising from the construction, maintenance, and operation of electric supply and communication lines and equipment. The B2H project will be designed, constructed, and operated at standards that meet, and in most cases, exceed, the provisions of NESC.

Physical loads induced onto transmission structures and foundations supporting the phase conductors and shield wires for the B2H project are derived from three phenomena: wind, ice, and tension. Under certain conditions, ice can build up on phase conductors and shield wires of transmission lines. When transverse wind loading is also applied to these iced conductors, it can produce structural loading on towers and foundations far greater than normal operating conditions produce. Design weather cases for the B2H project exceed the requirements in the NESC. As an example, for a high wind case, NESC recommends 90 miles per hour (mph) winds. The criteria proposed for this project is 100 mph wind on the conductors and 120 mph wind on the structures. There are multiple loading conditions that will be incorporated into the design of the B2H project, including unbalanced longitudinal loads, differential ice loads, broken phase conductors, broken sub-phase conductors, heavy ice loads, extreme wind loads, extreme ice and wind loads, construction loads, and full dead-end structure loads.

Transmission Line Foundation Design

The 500 kV single-circuit lattice steel structures require a foundation for each leg of the structure. The foundation diameter and depth shall be determined during final design and are dependent on the type of soil or rock present. The foundations will be designed to comply with the allowable bearing and shear strengths of the soil where placed. Soil borings shall be taken at key locations along the project route, and subsequent soil reports and investigations shall govern specific foundation designs as appropriate.

The 2017 NESC Rule 250A4 observes the structure capacity obtained by designing for NESC wind and ice loads at the specified strength requirements is sufficient to resist earthquake ground motions. Additionally, ASCE Manual No. 74 states transmission structures need not be designed for ground-induced vibrations caused by earthquake motion; historically, transmission structures have performed well under earthquake events,[8, 9] and transmission structure loadings caused by wind/ice combinations and broken wire forces exceed earthquake loads. It is common industry practice to design transmission line structures to withstand wind and ice loads that are equal to, or greater, than these NESC requirements.

Lightning Performance

The B2H project is in an area that historically experiences 20 lightning storm days per year.[10] This is relatively low compared to other parts of the United States. The transmission line will be designed to not exceed a lightning outage rate of one per 100 miles per year. This will be accomplished by proper shield wire placement and structure/shield wire grounding to adequately dissipate a lightning strike on the shield wires or structures if it were to occur. The electrical grounding requirements for the project will be determined by performing ground resistance testing throughout the project alignment, and by designing adequately sized counterpoise or using driven ground rods with grounding attachments to the steel rebar cages within the caisson foundations as appropriate.

Earthquake Performance

Experience has demonstrated that high-voltage transmission lines are very resistant to ground-motion forces caused by earthquake, so much so that national standards do not require these forces be directly considered in the design. However, secondary hazards can affect a transmission line, such as landslides, liquefaction, and lateral spreading. The design process considers these geologic hazards using multiple information streams throughout the siting and design process. For the current route, Idaho Power evaluated geologic hazards using available electronic (geographic information system [GIS]) data, such as fault lines, areas of unstable and/or steep soils, mapped and potential landslide areas, etc. Towers located in potential geologic hazards are investigated further to determine risk. Additional analysis may include field reconnaissance to gauge the stability of the area and subsurface investigation to determine the soil strata and depth of hazard. At the time of this report, no high-risk geologic

[8] Risk Assessment of Transmission System under Earthquake Loading. J.M. Eidinger, and L. Kemper, Jr. Electrical Transmission and Substation Structures 2012, Pg. 183-192, ASCE 2013.

[9] Earthquake Resistant Construction of Electric Transmission and Telecommunication Facilities Serving the Federal Government Report. Felix Y. Yokel. Federal Emergency Management Agency (FEMA). September 1990.

[10] USDA RUS Bulletin 1751-801.

hazard areas have been identified. If—during the process of final design—an area is found to be high risk, the first option would be to micro-site, route around, or span over the hazard. If avoidance is not feasible, the design team would seek to stabilize the hazard. Engineering options for stabilization include designing an array of sacrificial foundations above the tower foundation to anchor the soil or improving the subsurface soils by injecting grout or outside aggregates into the ground. If the geotechnical investigation determines the problematic soils are relatively shallow, the tower foundations can be designed to pass through the weaker soils and embed into competent soils.

Wildfire

The transmission line steel structures are constructed of non-flammable materials, so wildfires do not pose a physical threat to the transmission line itself. However, heavy smoke from wildfires in the immediate area of the transmission line can cause flashover/arcing between the phase conductors and electrically grounded components. Standard operation is to de-energize transmission lines when fire is present in the immediate area of the line. Transmission lines generally remain in-service when smoke is present from wildfires not in the immediate vicinity of the transmission line. When compared to other resource alternatives, B2H may be more resilient to smoke. For instance, solar PV is susceptible to smoke, which can move into areas even if fires are not in the immediate vicinity of the solar generation. For example, the recent forest fires events in the Pacific Northwest caused heavy smoke along the proposed B2H corridor and in the Pacific Northwest in general. In the event of heavy smoke, the B2H line would likely still operate so long as the fires are not in the immediate area, whereas solar PV would likely operate at a much-reduced capacity.

Idaho Power has developed a Wildfire Mitigation Plan (WMP)[11]. This plan details how Idaho Power uses situational awareness of wildfire and weather conditions to change the way the system is operated. It also includes best practices that internal and contract crews follow for construction and maintenance activities during wildfire season, vegetation management practices, system and distribution hardening efforts. B2H has been included in this analysis as part of the planning process. Idaho Power filed an updated WMP to the OPUC by December 31, 2021, that included a Public Safety Power Shutoff plan and other items required. The updated plan will also be filed with the IPUC, likely in the first quarter of 2022. This plan will be reviewed annually and updated with new information and lessons learned as required.

[11] docs.idahopower.com/pdfs/Safety/2022Wildfire%20MitigationPlan.pdf

Wind Gusts/Tornados

Tornados are unlikely along the B2H route. As noted in the Transmission Line Structural Loading Considerations section, the B2H transmission line is designed to withstand extreme wind loading combined with ice loading.

Ice

Ice formation around the phase conductors and around the shield wires can add a substantial amount of incremental weight to the transmission line, putting extra force on the steel structures and foundations. As described in the Transmission Line Structural Loading Considerations section, the B2H transmission line is designed to withstand heavy ice loading combined with heavy wind loading.

Landslide

The siting and design process considers geologic hazards, such as landslides, liquefaction, and lateral spreading. See the Earthquake Performance section. Through the siting and design process, steep, unstable slopes are avoided, especially where evidence of past landslides is evident. During the preliminary construction phase, geotechnical surveys and ground surveys (light detection and ranging [LiDAR] surveys) help verify potentially hazardous conditions. If a potentially hazardous area cannot be avoided, the design process will seek to stabilize the area.

Flood

The identification and avoidance of flood zones was incorporated into the siting process and will be further incorporated into the design process. Foundations and structures can be designed to withstand flood conditions.

Direct Physical Attack

A direct physical attack on the B2H transmission line will remove the line's ability to deliver power to customers. In the case of a direct attack, B2H is fundamentally no different than any other supply-side resource should a direct physical attack occur on a specific resource. However, because the B2H project is connected to the transmission grid, a direct physical attack on any specific generation site in the Pacific Northwest or Mountain West region will not limit B2H's ability to deliver power from other generation in the region. In this context, B2H provides additional ability for generation resources to serve load if a physical attack were to occur on a specific resource or location within the region and therefore increases the resiliency of the electric grid as a whole.

If a direct physical attack were to occur on the B2H transmission line and force the line out of service, the rest of the grid would adjust to account for the loss of the line. Per the WECC facility rating process, the B2H capacity rating is such that an outage of the B2H line would not overload any other system element beyond equipment emergency ratings. Idaho Power also keeps a supply of emergency transmission towers that can be very quickly deployed to replace a damaged tower allowing the transmission line to be quickly returned to service.

B2H Design Conclusions

As evidenced in this section, the B2H project is designed to withstand a wide range of physical conditions and extreme events. Because transmission lines are so vital to our electrical grid, design standards are stringent. B2H will adhere to, and in most cases, exceed, the required codes or standards observed for high voltage transmission line design. This approach to the design, construction, and operation of the B2H project will establish utmost reliability for the life of the transmission line. Additionally, as discussed in the Direct Physical Attack section, transmission lines add to the resiliency of the grid by providing additional paths for electricity should one or more generation resources or transmission lines experience a catastrophic event.

B2H Capacity Interest

At the beginning of 2022, Idaho Power, PAC, and BPA executed a Non-Binding Term Sheet that addresses B2H ownership, transmission service considerations, and asset exchanges. As part of the Term Sheet, BPA will transition out of its role as a joint B2H permitting partner and will instead take transmission service from Idaho Power to serve its customers. Idaho Power will increase its B2H ownership to 45.45% by acquiring BPA's B2H capacity and will utilize a portion of this increased capacity to provide BPA transmission service across southern Idaho.

In the 2021 IRP, the company modeled B2H assuming the company's Term Sheet specified 45.45% project ownership share.

The Term Sheet defines Idaho Power and PAC's capacity interests in the B2H project and is representative of how Idaho Power studied B2H in the 2021 IRP. Table 4 details the B2H capacity interests of PAC and Idaho Power.

Table 4. B2H Term Sheet capacity interests

	Capacity Interest (West-to-East)	Capacity Interest (East-to-West)	Ownership %
Idaho Power	750 MW	0 MW	45.45%
PAC	300 MW	600 MW	54.55%
Unallocated		400 MW	

Idaho Power plans to have 750 MW of west-to-east capacity and a share of any east-to-west capacity that is ultimately unallocated—at this time, 45.45% of 400 MW, or 182 MW of east-to-west capacity associated with B2H. This represents an increase over the 2019 IRP when Idaho Power's interest was seasonally shaped, with 500 MW of west-to-east capacity from April through September, 200 MW of west-to-east capacity from January through March and October through December, and a reduced share of any unallocated capacity. Focusing on the west-to-east capacity, the difference between the 2019 IRP and the 2021 IRP represents a 250 MW increase in the summer capacity and a 550 MW increase in the winter capacity. Idaho Power will provide transmission service to BPA utilizing much of this incremental capacity. In both the summer and winter seasons, BPA's load forecast through the 2040 IRP planning period is less than this incremental capacity.

Capacity Rating—WECC Rating Process

Early in B2H project development, Idaho Power coordinated with other utilities in the Western Interconnection via a peer-reviewed process known as the WECC Path Rating Process. Through the WECC Path Rating Process, Idaho Power worked with other western utilities to determine the maximum rating (power flow limit) across the transmission line under various stresses, such as high winter or high summer peak load, light load, high wind generation, and high hydro generation on the bulk power system. Based on industry standards to test reliability and resilience, Idaho Power simulated various outages, including the outage of B2H, while modeling these various stresses to ensure the power grid was capable of reliably operating with increased power flow. Through this process, Idaho Power also ensured the B2H project did not negatively impact the ratings of other transmission projects in the Western Interconnection.

Idaho Power completed the WECC Path Rating Process in November 2012 and achieved a WECC Accepted Rating of 1,050 MW in the west-to-east direction and 1,000 MW in the east-to-west direction. The B2H project, when constructed, will add significant reliability, resilience, and flexibility to the Northwest power grid.

B2H Project Coparticipants

PAC and BPA Needs

PAC and BPA are coparticipants in the permitting of the B2H project (also referred to as funders), with BPA planning to transition out per the Term Sheet discussed previously. Collectively, Idaho Power, PAC, and BPA represent a very large electric service footprint in the western US. The fact that three large utilities have each identified the value of the B2H project indicates the regional significance of the project and the value the project brings to customers throughout the West. More information about PAC's and BPA's needs and interest in the B2H project can be found in the following sections.

PAC

The following information was provided by PAC:

PAC is a locally managed, wholly owned subsidiary of Berkshire Hathaway Energy Company. PAC is a leading western United States energy services provider and the largest single owner of transmission in the West, serving 1.9 million retail customers in six western states. PAC is comprised of two business units: Pacific Power (serving Oregon, Washington, and California) and Rocky Mountain Power (serving Utah, Idaho, and Wyoming). Visit pacificorp.com for more information.

PAC's existing transmission path between the two balancing areas (PacifiCorp West [PACW] and PacifiCorp East [PACE]) consists of a single line (Midpoint, Idaho, to Summer Lake, Oregon) fully used during key operating periods, including winter peak periods in the Pacific Northwest and summer peak in the Intermountain West. PAC has invested in the permitting of the B2H project because of the strategic value of connecting the two regions. As a potential owner in the project, PAC would be able to use its bidirectional capacity to increase reliability and to enable more efficient use of existing and future resources for its customers. The following lists additional B2H benefits:

- **Customers:** PAC continues to invest to meet customers' needs, making only critical investments now to ensure future reliability, security, and safety. The B2H project will bolster reliability, security, and safety for PAC customers as the regional supply mix transitions.
- **Renewables:** The B2H project has been identified as a strategic project that can facilitate the transfer of geographically diverse renewable resources, in addition to other resources, across PAC's two balancing authority areas. Transmission line infrastructure, like B2H, is needed to maintain a robust electrical grid while integrating clean, renewable energy resources across the Pacific Northwest and Mountain West states. The PAC 2021 IRP Preferred Portfolio includes substantial new renewables facilitated by incremental transmission investments, demand-side management (DSM) resources, and significant storage resources. By the end of 2024, PAC's preferred portfolio includes more than 3,000 MW of renewables and nearly 700 MW of battery storage. At the end of the 20-year planning horizon in 2040, PAC's 2021 IRP Preferred Portfolio includes approximately 9,250 MW of new wind and solar. To support the addition of the new renewable resources typically located remotely from load centers and retirement of coal resources requires continued investment in a robust transmission system required to move resources across and between both PAC balancing areas.
- **Regional Benefit:** PAC, as a past member of the regional planning entity Northern Tier Transmission Group (NTTG), supported the inclusion of B2H in the NTTG 2018–2019

regional plan. PAC as a current member of the regional planning organization NorthernGrid has supported the inclusion of B2H into the 2020–2021 regional plan. From a regional perspective, the B2H project is a cost-effective investment that will provide regional solutions to identified regional needs. The project resolves possible system issues as identified in the NTTG 2018–2019 regional plan and the NorthernGrid 2020–2021 regional plan.

- **Balancing Area Operating Efficiencies:** PAC operates and controls two balancing areas. After the addition of B2H and portions of Gateway West, more transmission capacity will exist between PAC's two balancing areas, providing the ability to increase operating efficiencies. B2H will provide PAC 300 MW of additional west-to-east capability and 600 MW of east-to-west capability to move resources between PAC's two balancing authority areas.
- **Regional Resource Adequacy:** PAC is participating in the ongoing effort to evaluate and develop a regional resource adequacy program with other utilities that are members of the Northwest Power Pool. The B2H project is anticipated to provide incremental transmission infrastructure that will broaden access to a more diverse resource base, which will provide opportunities to reduce the cost of maintaining adequate resource supplies in the region.
- **Grid Resiliency:** The Midpoint-to-Summer Lake 500 kV transmission line is the only line connecting PAC's east and west control areas. The loss of this line has the potential to reduce transfers by 1,090 MW. When B2H is built, the new transmission line will provide redundancy by adding an additional 1,000 MW of capacity between the Hemingway Substation and the Pacific Northwest. This additional asset would mitigate the impact when the existing line is lost.
- **Oregon and Washington Renewable Portfolio Standards and Other State Legislation:** New legislation and rules for recently passed legislation are being developed to meet state specific policy objectives that are expected to drive the need for additional renewable resources. As these laws are enacted and rules are developed, PAC will evaluate how the B2H transmission line can help facilitate meeting state policy objectives by providing incremental access to geographically diverse renewable resources and other flexible capacity resources that will be needed to maintain reliability. PAC believes that investment in transmission infrastructure projects, like B2H and other Energy Gateway segments, are necessary to integrate and balance intermittent renewable resources cost effectively and reliably.
- **EIM:** PAC was a leader in implementing the western energy imbalance market (EIM). The real-time market helps optimize the electric grid, lowering costs, enhancing

reliability, and more effectively integrating resources. PAC believes the B2H project could help advance the objectives of the EIM and has the potential of benefitting PAC customers and the broader region.

- **Grid Reliability:** The loss of the Hemingway–Summer Lake 500 kV transmission line, the only 500 kV connection between the Pacific Northwest and Idaho Power, during peak summer load is one of the most severe possible contingencies the Idaho Power transmission system can experience. Once Hemingway–Summer Lake 500 kV disconnects, the transfer capability of the Idaho to Northwest path is reduced by over 700 MW in the west-to-east direction. After the addition of B2H, there will be two major 500 kV connections between the Pacific Northwest and Idaho Power. The Hemingway–Summer Lake 500 kV outage would become much less severe to Idaho Power's transmission system. Additionally, loss of the Hemingway–Summer Lake 500 kV line with heavy east-to-west power transfer out of Idaho to the Pacific Northwest results in significant system impacts. In this disturbance, an existing remedial action scheme (power system logic used to protect power system equipment) will disconnect over 1,000 MW of generation at the Jim Bridger Power Plant to reduce path transfers and protect bulk transmission lines and apparatus. Due to the magnitude of the generation loss, recovery from this disturbance can be extremely difficult. After the addition of B2H, this enormous amount of generation shedding will no longer be required. With two 500 kV lines between Idaho and the Pacific Northwest, the loss of one can be absorbed by the other. Keeping 1,000 MW of generation on the system for major system outages is important for grid stability.

BPA

BPA is a nonprofit federal power marketing administration based in the Pacific Northwest. BPA provides approximately 27% of the electric power used in the Pacific Northwest. BPA also operates and maintains about three-fourths of the high-voltage transmission in its service area. BPA's area includes Idaho, Oregon, Washington, western Montana, and small parts of eastern Montana, California, Nevada, Utah, and Wyoming. For more information, visit bpa.gov.

On January 19, 2022, BPA sent a letter to the region about B2H. This letter can be found on the following webpage:

bpa.gov/transmission/CustomerInvolvement/SEIdahoLoadService/Pages/default.aspx

Excerpt from the BPA letter to the region:

> The B2H with Transfer Service proposal presents a unique opportunity for BPA and other regional parties to work collaboratively together to support their respective goals of delivering firm, reliable, cost-effective power and

transmission service for their customers. The expected benefits of B2H with Transfer Service to the region in general, and BPA specifically, are multifaceted.

Regionally, B2H would increase the resiliency of the regional transmission system, including during severe weather conditions and during outages of other transmission facilities. Moreover, the combination of the B2H project (including the Midline Series Capacitor Project) along with other provisions in the Term Sheet would help to address existing operational issues involving transmission facilities in Oregon and Idaho. BPA also believes that the B2H project could support public policy objectives of bringing renewable resources to the region by reducing east to west transmission congestion between renewable resources located in Wyoming and Idaho and load centers on the west coast. Finally, it would also provide an additional outlet for surplus non-emitting resources from Washington and Oregon to displace remote emitting resources at certain times of the year.

For BPA specifically, the B2H with Transfer Service proposal would provide firm, stable, long-term transmission path to deliver federal power to BPA's SILS customers at an economical cost. The proposal would eliminate the double-wheel arrangement BPA currently uses to reach its loads, substantially reduce the risk of curtailments, and save BPA transmission and power purchase costs that occur under the interim plan. The B2H with Transfer Service proposal also avoids the complexities and complications of joint ownership and asset swaps originally considered in the B2H with Asset Swap proposal. Finally, B2H with Transfer Service results in greater projected transmission revenues for BPA as Idaho Power wheels over the federal transmission system to get to B2H. BPA will present its business case describing these savings and revenue projections and the overall value proposition for B2H with Transfer Service at a future workshop.

Additionally for BPA, the building of B2H will provide reinforcement for the Idaho-to-Northwest transmission path, also known as WECC Path 14. The substantial expansion of capacity across this path would likely be able to support reliable and cost effective long-term firm transmission service to several BPA customers, including BPA's other power customers currently located in Idaho Power's service territory. The increase in capacity at Path 14 would ensure these customers' access to federal power using the BPA network as well as the transmission capacity from the owners of the B2H project for their future load growth for years to come.

As a federal agency, BPA has responsibilities to comply with the National Environmental Policy Act (NEPA) and other legal requirements prior to making a final decision or taking any final agency action, such as committing to enter into transmission service contracts associated with the B2H project. Coincident with the signing of the Term Sheet, BPA has initiated a multi-step public process detailed in the aforementioned letter.

Coparticipant Agreements

Idaho Power, BPA, and PAC (collectively, the funders) entered a Joint Permit Funding Agreement on January 12, 2012. The agreement has been amended several times since 2012. The Amended and Restated Boardman to Hemingway Transmission Project Joint Permit Funding Agreement provides for the permitting (state and federal), siting, acquisition of ROW over public lands, the funding of preconstruction objectives, and acquisition of ROW options.

On January 18, 2022, the three B2H permit funding participants, Idaho Power, PAC, and BPA, executed a Non-Binding Term Sheet that addresses B2H ownership, transmission service considerations, and asset exchanges. The Term Sheet is described in the 2022 Term Sheet and B2H Project Partner Update section of this appendix.

Coparticipant Expenses Paid to Date

Approximately $125 million, including allowance for funds used during construction (AFUDC), have been expended on the B2H project through December 31, 2021. Pursuant to the terms of the joint funding arrangements, Idaho Power has received approximately $81 million of that amount as reimbursement from the project coparticipants as of December 31, 2021. Coparticipants are obligated to reimburse Idaho Power for their share of any future project permitting expenditures incurred by Idaho Power.

B2H Treasure Valley Integration Projects

The addition of the B2H project will require two 230 kV system integration projects to be completed on the Idaho Power system to create transmission capacity between Hemingway Substation and the Treasure Valley load area. These projects are estimated to cost approximately $35 million.

Hemingway–Bowmont #2 230 kV Line

A second transmission circuit will be added on the existing 13-mile Hemingway–Bowmont 230 kV line between the existing Hemingway Station near Melba, Idaho, to the existing Bowmont Station south of Nampa, Idaho.

Bowmont–Hubbard 230 kV Line

Integrating B2H into the Idaho Power system also will require a new 230 kV line from the existing Bowmont Station to the existing Hubbard Station east of Kuna, Idaho. This 16-mile line will be co-located with an existing 138-kV line on rebuilt transmission structures.

B2H INTEGRATED RESOURCE PLANNING

Resource Needs Evaluation and Markets

A primary goal of the IRP is to ensure Idaho Power's system has sufficient resources to reliably serve customer demand and flexible capacity needs over the 20-year planning period. The company has historically developed portfolios to eliminate resource deficiencies identified in a 20-year Load and Resource Balance. Under this process, Idaho Power developed portfolios which were quantifiably demonstrated to eliminate the identified resource deficiencies, and qualitatively varied by resource type, where the varied resource types that were considered reflected the company's understanding that the financial performance of a resource class is dependent on future conditions in energy markets and energy policy.

For the 2021 IRP, Idaho Power elected to use the AURORA model's long term capacity expansion modeling capability to develop optimal resource portfolios. Details regarding AURORA and the company's portfolio development process can be found in the main 2021 IRP report.

IRP Guideline Language—Transmission Evaluated on Comparable Basis

In Order No. 07-002, the OPUC adopted guidelines regarding integrated resource planning.[12]

> Guideline 5: Transmission. Portfolio analysis should include costs to the utility for the fuel transportation and electric transmission required for each resource being considered. In addition, utilities should consider fuel transportation *and electric transmission facilities as resource options*, taking into account their value for making additional purchases and sales, accessing less costly resources in remote locations, acquiring alternative fuel supplies, and improving *reliability*.

Boardman to Hemingway as a Resource

B2H has proven to be a cost-effective resource through successive IRPs. When evaluating and comparing alternative resources, two major cost considerations exist: 1) the installation costs of the project (capital and other fixed costs), and 2) the energy costs of the project (variable costs). Installation costs are derived through cost estimates to install the various projects. B2H has the lowest fixed cost per kW of any resource evaluated, and the energy costs associated with Mid-C purchases are also very competitive. Energy costs are calculated through a detailed modeling analysis, using the AURORA software. Energy prices are derived based on inputs into the model, such as gas price, coal price, nuclear price, hydro conditions, and variable operations and maintenance (O&M).

[12] apps.puc.state.or.us/orders/2007ords/07-002.pdf

Market Overview

Power Markets

A power market hub is an aggregation of transaction points (often referred to as bus points or buses). Hubs create a common point to buy and sell energy, creating one transaction point for bilateral transactions. Hubs also create price signals for geographical regions.

Six characteristics of successful electric trading markets include the following:

1. The geographic location is a natural supply/demand balancing point for a particular region with adequate available transmission.
2. Reliable contractual standards exist for the delivery and receipt of the energy.
3. There is transparent pricing at the market with no single player nor group of players with the ability to manipulate the market price.
4. Homogeneous pricing exists across the market.
5. Convenient tools are in place to execute trades and aggregate transactions.
6. Most importantly, there is a critical mass of buyers and sellers that respond to the five characteristics listed above and actively trade the market on a consistent basis. This is the definition of liquidity, which is clearly the most critical requirement of a successful trading hub.

Mid-C Market

The Mid-C electric energy market hub is a hub where power is transacted both physically and financially (derivative). Power is traded both physically and financially in different blocks: long term, monthly, balance-of-month, day ahead, and hourly. Much of the activity for balance-of-month and beyond is traded and cleared through a clearing exchange, the Intercontinental Exchange (ICE). For short-term transactions, such as day-ahead and real time (hourly), trades are made primarily between buyers and sellers negotiating price, quantity, and point of delivery over the phone (bilateral transactions). In the Pacific Northwest, most of the price negotiations begin with prices displayed for Mid-C on the ICE trading platform.

The Mid-C market exhibits all six characteristics of a successful electric trading market discussed above. Figure 3 shows the relative capacity of resources in the Northwest. This figure from the Pacific Northwest Utilities Conference Committee (PNUCC) assumes 8th percentile (critical) hydro generation and other resources set at utility defined peak capacity values. Even at critical hydro generation, the amount of hydro generation in the Northwest is significant.

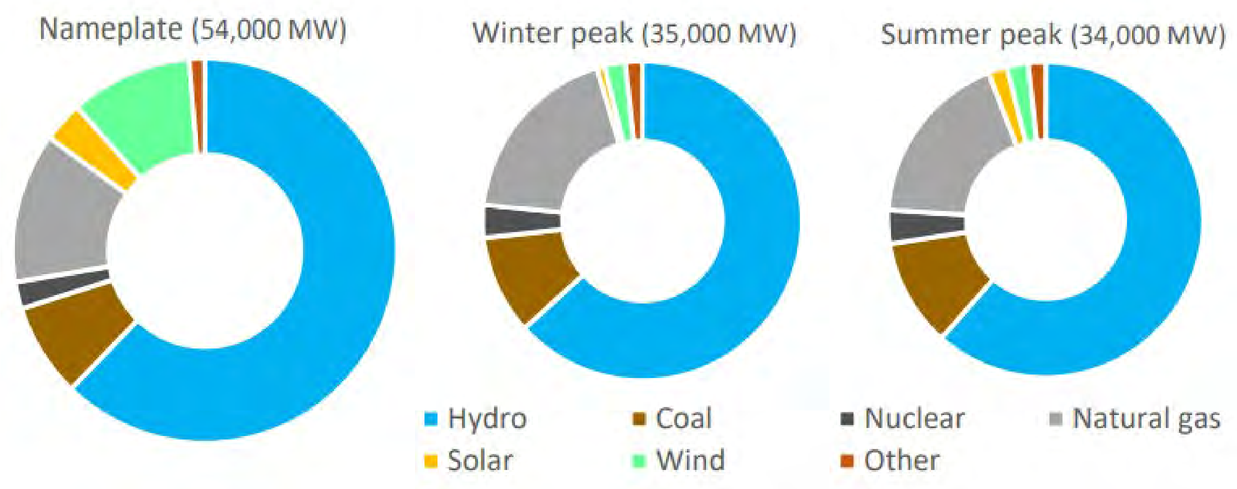


Figure 3. Northwest regional forecast (source: 2021 PNUCC)[13]

In the western United States, the other major market hubs are California–Oregon Border (COB), Four Corners (Arizona–New Mexico border), Mead (Nevada), Mona (Utah), Palo Verde (Arizona), and SP15 (California). The Mid-C market is very liquid. In 2020, on a day-ahead trading basis, daily average trading volume during heavy-load hours during June and July ranged from nearly 14,000 megawatt-hours (MWh) to nearly 32,000 MWh on the ICE platform alone. When combining heavy-load hours with light-load hours, on a day-ahead trading basis, the monthly volumes for June and July were each approximately 1,000,000 MWhs. These volumes are *in addition* to daily broker trades and month-ahead trading volumes, and only represent a fraction of the total transactions at Mid-C. Mid-C is by far the highest volume market hub in the west; frequently, Mid-C volumes are greater than the other hubs combined.

The following are some of the market participants that transact regularly at Mid-C. Additionally, numerous other independent power producers trade at Mid-C.

- Avista Utility
- BPA
- Chelan County PUD
- Douglas County PUD
- Eugene Water and Electric Board
- Idaho Power

[13] pnucc.org/system-planning/northwest-regional-forecast

- PAC
- Portland General Electric
- Powerex
- Puget Sound Energy
- Seattle City Light
- Tacoma Power

Energy traded at Mid-C is not necessarily physically generated in the Mid-Columbia River geographic area. For instance, Powerex is a merchant of BC Hydro in British Columbia and frequently buys and sells energy at Mid-C. A trade at Mid-C requires that transmission is available to deliver the energy to Mid-C. Transmission wheeling charges must be accounted for when transacting at Mid-C. Sellers at Mid-C must pay necessary transmission charges to deliver power to Mid-C, and buyers must pay necessary transmission charges to deliver power to load.

Mid-C and Idaho Power

Historically, Idaho Power wholesale energy transactions have correlated well with the Mid-C hub due to Idaho Power's proximity to the market hub, because it is the most liquid hub in the region, and because Idaho Power's load peaks in different months than other Northwest utilities. Energy at Mid-C can be delivered to, or received from, Idaho Power through a single transmission wheel through Avista, BPA, or PAC. Additionally, long-term monthly price quotes are readily available for Mid-C, making it an ideal basis for long-term planning.

Idaho Power uses the market to balance surplus and deficit positions between generation resources and customer demand and to cost-effectively meet customer needs. For example, when market purchases are more cost-effective than generating energy within Idaho Power's generation fleet, Idaho Power customers benefit from lower net power supply cost through purchases instead of Idaho Power fuel expense. Idaho Power customers also benefit from the sale of surplus energy. Surplus energy sales are made when Idaho Power's resources are greater than Idaho Power customer demand and when the incremental cost of these resources are below market prices. Idaho Power customers benefit from these surplus energy sales as offsets to net power supply costs through the power cost adjustment (PCA).

The Mid-C market could be used more to economically serve Idaho Power customers, but Idaho Power's ability to transact at Mid-C is limited due to transmission capacity constraints between the Pacific Northwest and Idaho. In other words, sufficient transmission capacity is currently unavailable during certain times of the year for Idaho Power to procure cost-effective resources from Mid-C for its customers, even though generation supply is available at the market.

Modeling of the Mid-C Market in the IRP

As part of the IRP analysis, Idaho Power uses the AURORA model to derive energy prices at all market hubs, including the Mid-C market. Energy prices are derived based on inputs into the model, such as gas price, coal price, nuclear fuel price, hydro conditions, Variable Energy Resources (VER) output, etc. Refer to main 2021 IRP document for more information on AURORA, forecast assumptions and modeling.

Energy purchases from the market require transmission to wheel the energy from the source to the utility purchasing the energy. Purchases from the Mid-C market would need to be wheeled across the BPA system to get the energy to the proposed Longhorn Substation near Boardman, Oregon. Idaho Power has submitted a transmission service request with BPA for this capacity that is a component of the 2022 Term Sheet discussed throughout this appendix.

Transmission wheeling rates and wheeling losses are included in the AURORA database and are part of the dispatch logic within the AURORA modeling. AURORA economically dispatches generating units, which can be located across any system in the West. All market energy purchases modeled in AURORA include these additional transmission costs and are included in all portfolios and sensitivities.

B2H Capacity Analysis

Capacity Costs

Table 5 below provides capital costs for resource options found in the 2021 IRP to have the lowest cost from a capacity perspective. The capital costs for B2H in the table below reflect the inclusion of local interconnection costs for B2H.

Table 5. Total capital dollars ($)/kilowatt (kW) for select resources considered in the 2021 IRP (2021$)

Resource Type	Total Capital $/kW	Depreciable Life
B2H	$647[1]	55 years
Combined-cycle combustion turbine (CCCT) (1x1) F Class (300 MW)	$1,656	30 years
Simple-cycle combustion turbine —Frame F Class (170 MW)	$900	35 years
Reciprocating Gas Engine (55.5 MW)	$1,560	40 years
Solar PV—Utility-Scale 1-Axis (100 MW) + 4-hr Battery (100 MW)	$2,150	30 years[2]

[1] Uses the B2H 750-MW capacity.

[2] Depreciable life assumed for the solar component is 30 years and is 15 years for the storage component.

The B2H total capital cost per kilowatt at peak is roughly 70% of the cost of the next lowest-cost resource. Additionally, B2H, as a transmission line, will depreciate over 55 years compared to at most 40 years for a gas plant or 30 years for a solar plant. The low up-front cost and slower depreciation further reduces the rate impact to Idaho Power's customers. The summation of these factors show B2H is the lowest capital-cost resource by a substantial margin.

Energy Cost

B2H increases Idaho Power's transmission capacity to the Pacific Northwest and enables additional purchased power from the Mid-C hub at both peak times and when energy prices are favorable relative to the costs of Idaho Power's existing resource fleet. The company believes that the increasing penetration of VERs, with their zero cost of energy, will depress market prices in the future. The company will be able to leverage B2H to make economic low-cost energy purchases.

B2H Comparison to Other Resources

The 2021 IRP provides an in-depth analysis of the B2H project compared to alternative resource options. Table 6 summarizes some of the high-level differences between B2H and other notable resource options.

Table 6. High-level differences between resource options

	B2H	Reciprocating engines	CCCT	Lithium batteries (4-Hr)	1-axis solar PV
Variable renewable					✓
Dispatchable capacity providing	✓	✓	✓	✓	
Non-dispatchable (coincidental) capacity providing					✓
Balancing, flexibility providing	✓	✓	✓	✓	
Energy providing	✓	✓	✓		✓
Variable costs (primary variable cost driver)	Mid-C market	Natural gas	Natural gas	Purchased power	No variable costs
Capital costs	$647 per on-peak kW	$1,560 per kW	$1,656/kW	$1,150 per kW	$1,000 per kW
Fuel price risk		✓	✓		
Wholesale power market price risk	✓			✓	
Other	Expanded access to market (Mid-C) providing abundant clean, renewable energy, highly reliable (low forced outage), as long-lived resource promotes stability in customer rates, benefit to regional grid, supports	Scalable (modeled generators 55.5-MW nameplate), relatively short-lead, very flexible resource, range driven by plant configuration.	Relatively short-lead resource, dispatchable, recent construction experience.	Uncertainty related to performance (e.g., # of lifetime cycles), dispatchable, scalable, potential for geographic dispersion.	Renewable, clean, scalable (modeled plants 100-MW nameplate), diminishing on-peak contribution with expanded penetration, short-lead resource, variable.

	B2H	Reciprocating engines	CCCT	Lithium batteries (4-Hr)	1-axis solar PV
	Idaho Power's clean energy goal, long-lead resource.				

Notes:

1 Provided capital costs are in nominal 2021 dollars.

2 Solar is not dispatchable but tends to produce at fairly high levels during summer periods of high customer demand.

3 Lithium battery is a net energy consumer (roundtrip efficiency = 85%). Lithium battery provides energy during heavy load hours or other high energy demand/high energy value periods; battery recharge costs tied primarily to Mid-C market costs or variable costs of Idaho Power's system resources during light load hours.

BPA Southeast Idaho Customer Loads

As described in the 2022 Term Sheet and B2H Project Partner Update section, BPA intends to transition out of its role as a joint B2H permitting partner and to rely on the completed B2H project to take transmission service from Idaho Power to serve its customers in southeast Idaho. Idaho Power's B2H capacity will increase from an average of 350 MW west-to-east to 750 MW west-to-east and Idaho Power will utilize a portion of its increased B2H capacity to provide BPA network transmission service across southern Idaho. The six BPA southeast customers that will be served via this new network transmission service are listed in Table 7. Collectively, these BPA southeast Idaho customer loads are winter peaking and have a high offset by internal BPA network resources, primarily Palisades Power Plant, during the summer months. Given these characteristics, the load service coordinates very well with Idaho Power's planned summer peaking load pattern and expected B2H usage for imports to serve Idaho Power native load customers.

Table 7. BPA southeast (SE) Idaho Customers

BPA SE Idaho Customers
City of Idaho Falls
Lower Valley Energy
Fall River Rural Electric Cooperative
City of Soda Springs
Salmon River Rural Electric Cooperative
Lost River Electric Cooperative

B2H BENEFITS AND VALUES

Capacity

High-voltage transmission lines provide many significant benefits to the Western Interconnection. The most significant benefit of the B2H project is the capacity benefit of the transmission line. Idaho Power is developing the B2H project to create capacity to serve peak customer demand. The capacity benefit is described in more detail in the B2H Integrated Resource Planning section of this appendix.

The Pacific Northwest is a winter peaking region. Pacific Northwest utilities continue to install and build generation capacity to meet winter peak regional needs. Idaho Power operates a system with an early summer peak demand. Idaho Power's peak occurs in the late June/early July timeframe because of its irrigation load. Idaho Power's peak aligns well with spring hydro runoff conditions when the Pacific Northwest is flush with surplus power capacity.

The existing transmission system between the Pacific Northwest and Idaho Power is constrained. Constructing B2H will alleviate this constraint and add 1,050 MW of transfer capability between the Pacific Northwest and Idaho Power (2,050 MW total bi-directionally). Both the Pacific Northwest and Idaho Power will significantly benefit from the addition of transmission capacity between the regions by leveraging the diversity of their respective seasonal demand and generation profiles. The Pacific Northwest has already built the power plants and would benefit from selling energy to Idaho Power. Idaho Power needs resources to serve peak load, and a transmission line to existing, underutilized power plants is much more cost effective than building a new power plant.

Clean Energy Future

The benefits of B2H in aggregate reflect its importance to the achievement of Idaho Power's goal to provide 100% clean energy by 2045 without compromising the company's commitment to reliability and affordability. In-depth studies and experts, such as the American Clean Power Association, cite the need for an expanded and robust transmission system in a decarbonized future.[14] Indeed, the Americans for a Clean Energy Grid highlighted B2H as one of 22 projects that were needed to enable the interconnection of around 60,000 MW of additional renewable

[14] cleanpower.org/wp-content/uploads/2021/01/June-2021_Transmission-Fact-Sheet.pdf
utilitydive.com/news/as-operators-update-grid-planning-for-renewables-transmission-remains-key/505065/
pv-magazine-usa.com/2019/08/30/clean-energy-groups-allies-call-for-overhaul-of-the-transmission-grid/

capacity in the United States.[15] A *Net Zero America* report by Princeton[16] concluded that the United States will need to expand its electricity transmission system by 60% by 2030 in order to achieve net-zero emissions by 2050.

Leverage Regional Diversity

In the early days of the electric grid, utilities built individual power plants to serve their local load. Utilities quickly realized that if they interconnected their systems with low-cost transmission, the resulting diversity of load reduced their need to build power plants. Utilities also realized that transmission allowed them to build and share larger, more cost-effective, and more efficient power plants. The same opportunities exist today. In fact, B2H is being developed to take advantage of existing diversity.

Table 8 illustrates peak-load estimates, by utility and season, for 2030. As seen in the table, there is significant diversity of load among the utilities and between the western and eastern side of the entire Northwest. The "Maximum (MW)" column illustrates the minimum amount of generating capacity that would be required if each utility were to individually plan and construct generation to meet their own peak load need of 71,900 MW. When all utilities plan together, the total generating capacity can be reduced to 63,500 MW, a more than 10% reduction. Also note that the Western Northwest (NW) regions have a total winter peak that is 8,200 MW higher than its summer peak. On the other hand, the Eastern NW regions have a total summer peak that is 9,400 MW more than its winter peak. Transmission connections between the regions, such as B2H, are the key to sharing installed generation capacity.

Table 8. 2030 peak load estimates—illustration of load diversity between western regions

Region	Summer Peak (MW)	Winter Peak (MW)	Maximum (MW)
Avista	2,200	2,400	2,400
BPA	10,100	12,900	12,900
British Columbia	9,100	12,200	12,200
Chelan	300	500	500
Douglas	300	500	500
Grant	1,500	1,400	1,500
PAC—West	3,800	4,000	4,000
Portland General	3,900	3,800	3,900
Puget Sound	4,200	5,200	5,200
Seattle City	1,200	1,600	1,600
Tacoma	600	900	900

[15] https://cleanenergygrid.org/wp-content/uploads/2021/09/Transmission-Projects-Ready-to-Go.pdf

[16] https://netzeroamerica.princeton.edu/img/Princeton_NZA_Interim_Report_15_Dec_2020_FINAL.pdf

Region	Summer Peak (MW)	Winter Peak (MW)	Maximum (MW)
Western NW Total	**37,200**	**45,400**	**45,600**
Idaho Power	4,500	2,900	4,500
Nevada	9,100	4,100	9,100
Northwestern Energy	2,100	2,100	2,100
PAC—East	10,600	7,800	10,600
Eastern NW Total	26,300	16,900	26,300
Total	**63,500**	**62,300**	**71,900**

Note: From EEI Load Data used for the WECC 2030 ADS PCM

Load diversity occurs seasonally, as illustrated in Table 8, but it also occurs sub-seasonally and daily. An additional major variable in the Northwest is hydroelectric generation diversity. Over the winter, water accumulates in the mountains through snowpack. As this snow melts, water flows through the region's hydroelectric dams, and northwest utilities generate a significant amount of power. During the spring runoff, generation capacity available in the Pacific Northwest can be significantly higher than in the winter or even late summer. Idaho Power is fortunate to have a peak load that is coincident with the late spring/early summer hydro runoff. Idaho Power's peak load occurs in late June/early July, when hot weather causes major air-conditioning load coincident with agricultural irrigation/pumping load. Idaho Power's time window for a significant peak is quite short, with agricultural irrigation/pumping load starting to ramp down by mid-July.

Capacity to Four Corners Market Hub

As part of the 2022 Term Sheet detailed earlier in this appendix, Idaho Power will acquire PAC transmission assets and their related capacity sufficient to enable Idaho Power to utilize 200 MW of bidirectional transmission capacity between the Idaho Power system (Populus) and Four Corners, through Mona. Four Corners is a Desert Southwest market hub and eight entities with transmission have connectivity to the Four Corners market hub. Idaho Power will also have a connection to entities at Mona in central Utah.

Table 9. List of transmission entities at Four Corners and Mona

Entities with Transmission at Four Corners	Entities with Transmission at Mona
Arizona Public Service	Intermountain Power Agency (LADWP)
Salt River Project	PAC
Tri State G&T	
Western Area Power Admiration	
Xcel Energy	
PNM	
Tucson Electric Power Company	
PAC	

Idaho Power believes that the acquired Four Corners capacity will provide the company with long-term strategic value diverse from B2H. The Desert Southwest is rich with solar potential which is expected to continue its significant growth in the future, New Mexico has significant wind potential, and the number of Desert Southwest entities with a presence at this market hub presents significant market diversity opportunities. Idaho Power believes additional access to this market hub during the winter months will prove to be extremely valuable in a low carbon future.

The transmission assets between Idaho and Four Corners will provide a valuable firm transmission connection to a market hub that is diverse from Mid-C. In essence, the B2H project is enabling two diverse connections to two major western market hubs. As a conservative planning approach, this additional 200 MW of import capacity is set to zero in planning margin calculations for the summer peaking months. The diversity of capacity from multiple market hubs solidifies and supports that the overall B2H project capacity will achieve 500 MW of peak import capacity into Idaho Power.

Borah West and Midpoint West Capacity Upgrades

As part of the 2022 Term Sheet, transmission capacity on the Idaho Power operated Borah West and Midpoint West transmission paths must be upgraded to support additional east-to-west schedules required by Idaho Power and PAC across southern Idaho. There are two system upgrade projects identified to reinforce Borah West and Midpoint West to enable these increased east-to-west transmission flows through Idaho:

1. **Midpoint–Kinport 345 kV Series Capacitor Addition:** The addition of a series capacitor on the existing Midpoint–Kinport 345 kV line will increase the Borah West path rating by approximately 500 MW. This series capacitor allows for more optimal distribution of flows on the existing 345 kV lines west of Borah Station near American Falls, Idaho.
2. **Midpoint 500/345 kV Second Transformer Addition:** The existing single 500/345 kV transformer bank is a bottleneck for increased flows across the Idaho system. A second 500/345 kV transformer will need to be installed to increase the capacity of the existing Midpoint–Hemingway 500 kV line to accommodate higher east-to-west transfers across Idaho to Hemingway.

These upgrades will net an approximate 600 MW increase in capacity across southern Idaho and enable PAC's usage of its B2H capacity. Additionally, Idaho Power will be relieved of its 510 MW long-term point-to-point transmission service obligation across southern Idaho and be able to repurpose this transmission to integrate new resources (many identified in the 2021 IRP Preferred Portfolio) for Idaho Power customer benefit.

Improved Economic Efficiency

Transmission congestion causes power prices on opposite sides of the congestion to diverge. Transmission congestion is managed by dispatching higher cost, less efficient resources to ensure the transmission system is operating securely and reliably. Congestion can have a significant cost. During peak summer conditions, the Idaho to Northwest path in the west-to-east direction can become constrained and power prices in Idaho and to the east can generally be high, while power prices in the Pacific Northwest can be depressed due to a surplus of power availability without adequate transmission capacity to move the power out of the region. The construction of B2H will help alleviate this constraint and create a win–win scenario where generators in the Pacific Northwest will be able to gain further value from their existing resource, and load-serving entities in the Mountain West region will be able to meet load service needs at a lower cost. The reverse situation is true as well—the Pacific Northwest will benefit from economical resources from the Mountain West region during certain times of the year.

Renewable Integration

To facilitate a transition from coal and fossil fuel resources to meet Idaho Power and surrounding states' clean energy goals, the region requires new and upgraded transmission capacity to integrate and balance variable energy resources like wind and solar.
Existing renewable generation is, at times, curtailed due to a lack of transmission capacity to move the energy to load. B2H can facilitate the transfer of geographically diverse renewable resources across the western grid and help ensure our clean energy grid of the future is robust and reliable.

Grid Reliability/Resiliency

Transmission grid disturbances do occur. B2H will increase the robustness and reliability of the regional transmission system by adding additional high-capacity bulk electric facilities designed with the most up-to-date engineering standards. Major 500 kV transmission lines, such as B2H, substantially increase the grid's ability to recover from unexpected disturbances.
Unexpected disturbances are difficult to predict, but below are a few examples of disturbances whose impacts would be reduced with the addition of B2H:

1. Loss of the Hemingway–Summer Lake 500 kV line with heavy west-to-east power transfer into Idaho. The loss of the Hemingway–Summer Lake 500 kV transmission line, the only 500 kV connection between the Pacific Northwest and Idaho Power, during peak summer load is one of the worst possible contingencies the Idaho Power transmission system can experience. Once Hemingway–Summer Lake 500 kV disconnects, the transfer capability of the Idaho to Northwest path is reduced by over

700 MW in the west-to-east direction. After the addition of B2H, there will be two major 500 kV connections between the Pacific Northwest and Idaho Power. The Hemingway–Summer Lake 500 kV outage would become much less severe to Idaho Power's transmission system.

2. Loss of the Hemingway–Summer Lake 500 kV line with heavy east-to-west power transfer out of Idaho to the Pacific Northwest. In this disturbance, an existing remedial action scheme (power system logic used to protect power system equipment) will disconnect over 700 MW of generation at the Jim Bridger Power Plant or Wyoming Wind to reduce path transfers and protect bulk transmission lines and apparatus. Due to the magnitude of the generation loss, recovery from this disturbance can be extremely difficult. After the addition of B2H, this sizable amount of generation shedding will no longer be required. With two 500 kV lines between Idaho and the Pacific Northwest, the loss of one can be absorbed by the other. Keeping 700 MW of generation on the system for major system outages is important for grid stability.
3. Loss of a single 230 kV transmission tower in the Hells Canyon area. Idaho Power owns two 230 kV transmission lines, co-located on the same transmission towers, that connect Idaho to the Pacific Northwest. Because these lines are on a common tower, Idaho Power must consider the simultaneous loss of these lines as a realistic planning event. Historically, such an outage did occur on these lines in 2004 during a day with high summer loads. By losing these lines, Idaho Power's import capability was dramatically reduced, and Idaho Power was forced to rotate customer outages for several hours due to a lack of resource availability. After the addition of B2H, the impact of this outage would be substantially reduced.

Resource Reliability

The forced outage rate of transmission lines has historically been lower than traditional generation resources. Availability and contribution to resource adequacy on the power grid vary significantly by resource type. The North American Electric Reliability Corporation (NERC) has historically tracked transmission availability through a Transmission Availability Data System (TADS) and generation availability through a Generation Availability Data System (GADS) in North America. Outage statistics between transmission and generation differ, as transmission varies in voltage class and total line length, while generators mostly differ in total size and fuel type. A telling sign of the reliability of a generation resource is the equivalent forced outage rate (EFORd). The EFORd is calculated based on the amount of time a generator or a transmission line, is either de-rated, or completely forced out of service, while needed.

De-rating a generator or a transmission line, would be considered a partial outage, based on the de-rate amount as a percentage of the total capacity.

Table 10 provides the EFORd values used in the 2021 IRP. The EFORd values were obtained from the company historical data and from the latest data available in GADS and TADS at the time of the analysis.[22]

Table 10. NERC forced-outage rate information for different resources

Generation Type	Unit Size	EFORd
Coal	All Sizes	6.34%–9.18%
Hydro	All Sizes	3.6%
Gas Simple Cycle	All Size	4.44%–7.3%
Gas Combined Cycle	>200 MW	2.0%
New Transmission	400-599 kV	0.25%

From the NERC TADS data, a 300-mile, 500 kV transmission line (B2H) would be expected to have an equivalent forced outage rate of 0.25%; the B2H transmission line is expected to have 99.75% availability when needed.

A transmission line with a forced outage rate of less than 1% is significantly more reliable than a power plant, as shown in Table 10. Of course, a transmission line requires generating resources to provide energy to the line to serve load. However, energy sold as "Firm" must be backed up and delivered even if a source generator fails. Therefore, Firm energy purchases would have an EFORd consistent with the transmission line, which is more reliable than traditional supply-side generation. In the management of cost and risk, B2H will provide Idaho Power's operators additional flexibility when managing the Idaho Power resource portfolio.

As described in the *2021 IRP Appendix C–Technical Report*, Idaho Power evaluated the Loss of Load Expectation for each IRP portfolio. Figure 4 depicts the additional Simple Cycle Combustion Turbine equivalent generation capacity required to maintain the Preferred Portfolio (Base with B2H) and the Base without B2H PAC Bridger Alignment portfolio (the least-cost portfolio that did not include B2H) within the desired reliability threshold.

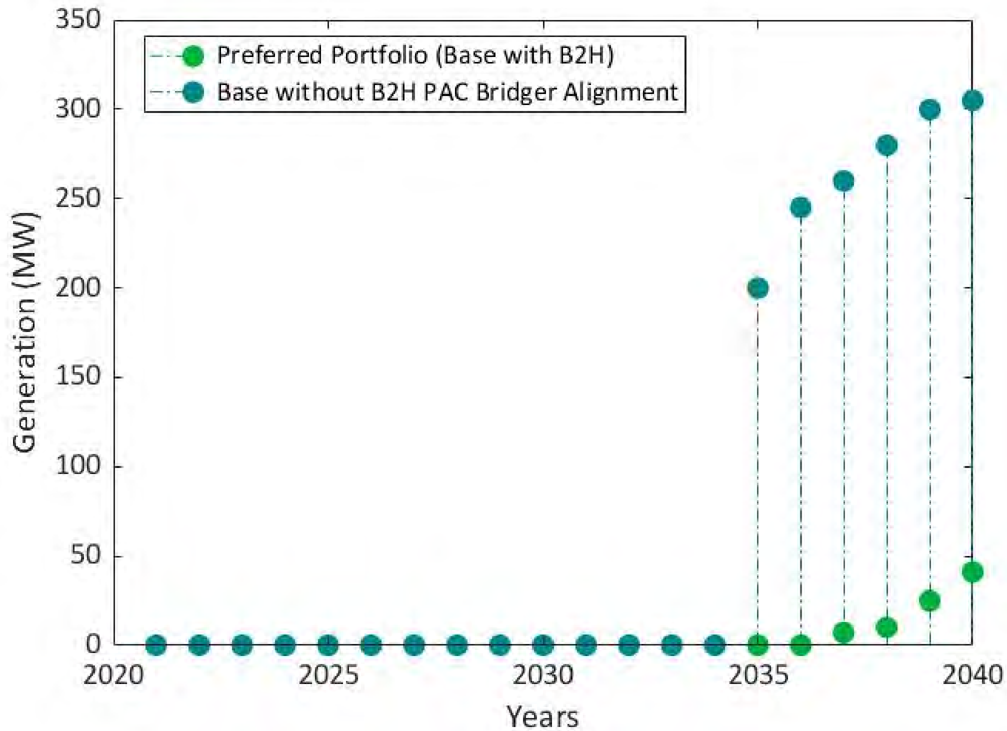


Figure 4. Additional generation required to achieve 0.05 LOLE by portfolio

Figure 4 shows that the Preferred Portfolio (Base with B2H) is significantly more reliable than the best portfolio that did not include B2H.

Contingency Reserves

During real-time operations, Idaho Power holds generation in reserve to meet its contingency reserve obligation. As a requirement of NERC BAL-002-WECC-2a, Idaho Power has an obligation to hold generation in reserve equaling at least 3% of network demand plus 3% of internal generation. For market purchase imports, the 3% contingency requirement for the generation is not borne by Idaho Power. The producer in the external balancing area is required to meet the 3% reserve obligation associated with its resource. Compared to an internal resource located within the Idaho Power area, imported market purchases reduce Idaho Power's reserve obligation.

Idaho Power plans to make additional market purchases with B2H. The selling entity will carry the contingency reserve obligation. This reduction in reserve obligation will offset the additional reserve obligations taken on by the company through the increased amount of BPA customer network load and generation in the Idaho Power area. Table 11 details the increase in transmission network customer reserve obligations being offset by reduced reserve obligations from market purchases. Idaho Power's reserve obligation during summer peak is still reduced with B2H compared to a replacement internal resource.

Table 11. Change in Idaho Power contingency reserve obligation with B2H

	Change in Summer Peak Network Demand	Change in Summer Peak Network Resource	Change in Reserve Obligation
New BPA Southeast Customer Idaho Network Load and Gen	~325 MW	~145 MW	14.1 MW
Idaho Power Market Purchases via B2H Instead of a New Internal Resource	-	(500 MW)	(15 MW)
Total	**-**	**-**	**(0.9 MW)**

Reduced Electrical Losses

During peak summer conditions, with heavy power transfers on the Pacific Northwest and Idaho Power transmission systems, the addition of the B2H project is expected to reduce electrical losses by nearly 100 MW across the Western Interconnection (factoring in more than just Idaho Power's system). This is a considerable savings for the region; 100 MW of generation, that customers ultimately pay for, does not need produced to supply losses alone. Electrical losses add to the demand level that needs to be supplied by the power system.

Losses on the power system are caused by electrical current flowing through energized conductors, which in turn create heat. Losses are equal to the electrical current squared times the resistance of the transmission line:

$$Electrical\ Losses = Current^2 \times Resistance$$

From the electrical losses equation above, if the current doubles, the electrical losses will increase by a factor of four. By constructing the B2H line, less efficient (i.e., lower voltage) transmission lines with very large transfers are relieved, reducing the electrical current through these lines and dramatically reducing the losses due to heat.

The electrical losses vary throughout the year depending on flow levels on the lines.
To determine an average electrical loss saving benefit for Idaho Power resulting from the B2H project, various seasonal WECC power flow base cases were utilized to simulate flow conditions with and without the addition of B2H. The Idaho Power area transmission losses from simulated base case scenarios are shown in Table 12. In six of the seven cases the B2H project resulted in a beneficial reduction of losses in the Idaho Power balancing area.

Table 12. Idaho Power area losses from powerflow cases pre- and post-B2H

Powerflow Case	Idaho Power Losses		
	Pre-B2H	Post-B2H	Change (MW)
Peak Summer	207.2 MW	176.5 MW	-30.7 MW
Peak Summer NW Import	185.6 MW	159.3 MW	-26.3 MW
Peak Winter	97.8 MW	87.3 MW	-10.5 MW
Off Peak Summer	82.9 MW	75.7 MW	-7.2 MW
Off Peak Winter	61.1 MW	61.3 MW	0.2 MW
Off Peak Light NW Export	106.8 MW	106.0 MW	-0.8 MW
Off Peak Heavy NW Export	189.4 MW	180.2 MW	-9.2 MW

The above loss benefits in Table 12 are for seven specific powerflow hours. To develop an average loss savings benefit for B2H that considers all flow hours, regression analysis was performed to develop quadratic equation coefficients that relate path flows to predicted energy loss savings. Next, historical transmission path flows from the previous five years were captured and analyzed with developed loss savings coefficients. The result of the analysis was an Idaho Power 6.4 MW average electrical loss savings with the addition of B2H. This 6.4 MW average loss saving benefit was utilized as an input in the B2H scenarios for the 2021 IRP. For IRP portfolios with B2H included, the Idaho Power load was reduced by 6.4 MW during all hours to capture the value of this reduction in electrical losses.

Flexibility

Advances in technology are pushing some generation resources, such as coal plants, toward economic obsolescence. Any supply-side resource alternative could face the same economic obsolescence in the future. B2H is an alternative to constructing a new supply-side resource and, therefore, reduces the risk of technological obsolescence. B2H will facilitate the transfer of any generation technology, ensuring Idaho Power customers always have access to the most economic resources, regardless of the resource type.

B2H capacity, when not used by B2H owners, will be available (for purchase) to other parties to make economic interstate west-to-east and east-to-west power transfers for more efficient regional economic dispatch. This provides a regional economic benefit to utilities around Idaho Power that is not factored into the analysis. Specifically, the B2H project will make additional capacity available for Pacific Northwest utilities to sell energy to southern and eastern markets in the west, and for Pacific Northwest utilities to purchase energy from southern and eastern markets to meet their winter peak load service needs (southern and eastern WECC entities are mostly summer peaking). Idaho Power customers benefit from any third-party transmission purchases as the incremental transmission revenue acts to offset retail customer costs.

The existing electric system is heavily used. Because the system is so heavily used, new transmission line infrastructure, like B2H, creates additional operational flexibility. B2H will increase the ability to take other system elements out of service to conduct maintenance and will provide additional flexibility to move needed resources to load when outages occur on equipment.

EIM

Idaho Power views the regional high-voltage transmission system as critical to the realization of EIM benefits. The expansion of this transmission system, through the addition of B2H, will facilitate further benefits by increasing transmission capacity between Idaho Power and other EIM participants. As fluctuations in supply and demand occur for EIM participants, the market system will automatically find the best resource(s) from across the large-footprint EIM region to meet immediate power needs. Additional Northwest utilities are joining the EIM increasing the value the transmission system provides. This activity optimizes the interconnected high-voltage system as market systems automatically manage congestion, helping maintain reliability while also supporting the integration of variable energy resources and avoiding curtailing excess supply by sending it to where demand can use it.

Idaho Power notes that its participation in the EIM does not alter its obligations as a balancing authority (BA) required to comply with all regional and national reliability standards. Participation in the western EIM does not change NERC or WECC responsibilities for resource adequacy, reserves, or other BA reliability-based functions for a utility.

Transmission capacity and connectivity is critical to evolution of markets in the west. Market expansion efforts such as the California Independent System Operator's (CAISO) Energy Day-Ahead Market (EDAM) or the Southwest Power Pool's (SPP) markets both look to optimize transmission between entities to capture diversity of resources and loads. Greater transmission transfer capacity between participants in a market reduces congestion costs and allows the lowest cost energy to reach a wider load footprint. Transmission benefits customers in both the EIM and expanded markets through increased competition and liquidity as customers gain access to a wider set of generators through an optimized market dispatch.

B2H Complements All Resource Types

Utility-scale resource installations allow economies of scale to benefit customers in the form of lower cost per watt. For instance, residential rooftop solar is growing in popularity, but the economics of rooftop solar are outweighed by the economics of utility-scale solar installation.[17] Large transmission lines allow the most economical resources to be sited in the most economical locations. As an example, in the 2021 IRP, wind in Idaho is expected to have a capacity factor of approximately 35% (where the capacity factor is the amount of time the system generates relative to its nameplate rating over the course of a year). Comparatively, wind in Wyoming has a capacity factor of 45%. If wind installation costs are assumed to be equivalent in Idaho and Wyoming, a Wyoming installation would generate over 28% more energy over the course of the year. Transmission lines provide the ability to move the most economical resources around the region.

Idaho Power views transmission lines like B2H as a complement to any resource type that allows access to the least-cost and most efficient resource, as well as regional diversity, to benefit all customers in the West.

B2H Benefits to Oregon

Economic and Tax Benefits

The B2H project will result in positive economic impacts for eastern Oregon communities in the form of construction jobs, economic support associated with infrastructure development (i.e., lodging and food), and increased annual tax benefits to each county for project-specific property tax dollars. The annual tax benefit of the line is shown in Table 13 below. Idaho Power anticipates the project will add about 500 construction jobs, which will provide a temporary increase in spending at local businesses.

Table 13. Projected annual B2H tax expenditures by county*

Oregon County	Property Tax
Morrow	$318,040
Umatilla	$421,048
Union	$1,002,165
Baker	$1,815,398
Malheur	$2,241,157
Total Oregon Tax Benefit	**$5,797,808**

*The property tax valuation process for utilities is determined differently than locally assessed commercial and residential property. The Oregon Department of Revenue determines the property tax value for Idaho Power's property (transmission, distribution, production, etc.) as one lump sum value (i.e., not by individual assets). The Oregon Department of Revenue then apportions and remits Idaho Power's lump sum assessed value to each county. It is from those values that the county generates property tax bills for the company. Idaho Power converts its Oregon property tax payment by county into an internal rate that can be applied to Idaho Power's transmission, distribution, and production book investment to estimate taxes. This internally calculated tax rate is what was applied to the B2H estimated book investment (project cost) to estimate property taxes. The table above summarizes the tax value derivation. For estimation purposes, the estimated property taxes are assumed at Idaho Power tax rates. PAC property taxes may differ from Idaho Power's property taxes.

[17] The National Renewable Energy Laboratory (NREL) estimates the cost of residential rooftop solar (PV) is nearly 2.5 times the cost of utility-scale solar on a $/Watt basis (NREL, Annual Technology Baseline: Electricity: 2019).

Local Area Electrical Benefits

The B2H project will add 1,050 MW of additional transmission connectivity between the BPA and Idaho Power systems. Currently, the transmission connections between BPA and Idaho Power are fully committed for existing customer commitments. Along the B2H line route, Idaho Power currently serves customers in Idaho's Owyhee County and in Oregon's Malheur County and portions of Baker County. PAC, through Pacific Power, serves portions of Umatilla County. BPA provides transmission service to local cooperatives in the remainder of the project area in Morrow, Umatilla, Union, and Baker counties. Below is a summary of how these areas will benefit directly from B2H.

La Grande and Baker City are served by the Oregon Trails Electric Cooperative (OTEC). Portions of Morrow County and Umatilla County are served by Umatilla Electric Cooperative (UEC) and Columbia Basin Electric Cooperative (CBEC). OTEC, UEC, and CBEC pay BPA's network transmission rate to receive transmission service from the BPA system. BPA is kicking off a public process related to B2H in 2022, and Idaho Power expects BPA's business case will show B2H is a cost-effective solution to meet BPA customer needs. Correspondingly, given the sharing of BPA's transmission costs, OTEC, UEC, and CBEC customers would also benefit from this cost-effective solution.

The B2H project provides economic development opportunities. The cost of power is a major factor in economic development and—as discussed previously—B2H, as a low-cost resource alternative, will keep power costs low compared to more expensive alternatives.

Capacity must be available on the existing system for additional economic development to take place. In Union and Umatilla counties, BPA's McNary–Roundup–La Grande 230 kV line has limited ability to serve additional demand in the Pendleton and La Grande areas but is currently capable of meeting the 10-year load forecast. The B2H project will increase the transfer capability through eastern Oregon by 1,050 MW. This capacity will provide a significant regional benefit to the entire Northwest and specifically benefit load service to eastern Oregon and southern Idaho. It is possible this added capacity resulting from the B2H project could be used to serve additional demand in Union and Umatilla counties.

Portions of Baker County are served by Idaho Power, including the communities of Durkee and Huntington. BPA currently provides energy to OTEC, which serves Baker City via transmission connections between the Northwest and Idaho Power's transmission system. The existing transmission connections between the Northwest and Idaho Power are fully used for existing load commitments, with very little ability to meet load growth requirements. The B2H project associated increased transmission connectivity between the Northwest and Idaho Power will allow BPA to serve additional demand in Baker City.

Finally, additional transmission capacity can create opportunities for new energy resources, which can add to the county tax base and create new jobs.

GATEWAY WEST PROJECT

Project Background

The Gateway West transmission line project is a joint project between Idaho Power and PAC to build and operate approximately 1,000 miles of new transmission lines from the planned Windstar Substation near Glenrock, Wyoming, to the Hemingway Substation near Melba, Idaho. PAC is currently the project manager for Gateway West, with Idaho Power providing a supporting role.

Figure 5 shows a map of the entire project identifying the authorized routes in the federal permitting process based on the BLM's November 2013 ROD for segments 1 through 7 and 10. Segments 8 and 9 were further considered through a Supplemental EIS by the BLM. The BLM issued a ROD for segments 8 and 9 on January 19, 2017. In March 2017, this ROD was rescinded by the BLM for further consideration. On May 5, 2017, the Morley Nelson Snake River Birds of Prey National Conservation Area Boundary Modification Act of 2017 (H.R. 2104) was enacted. H.R. 2104 authorized the Gateway West route through the Birds of Prey area that was proposed by Idaho Power and PAC and supported by the Idaho Governor's Office, Owyhee County and certain other constituents. On April 18, 2018, the BLM released the Decision Record granting approval of a ROW for Idaho Power's proposed routes for segments 8 and 9.

In its 2017 IRP, PAC announced plans to construct a portion of the Gateway West Transmission Line in Wyoming. PAC has subsequently constructed the 140-mile segment between the planned Aeolus Substation near Medicine Bow, Wyoming, and the Jim Bridger power plant near Point of Rocks, Wyoming. The Aeolus to Bridger/Anticline 500 kV line segment was energized November 2020.

Gateway West will provide many benefits to Idaho Power customers, including the following:

- Relieve Idaho Power's constrained transmission system between the Magic Valley (Midpoint) and the Treasure Valley (Hemingway). Transmission connecting the Magic Valley and Treasure Valley is part of Idaho Power's core transmission system, connecting two major Idaho Power load centers
- Provide the option to locate future generation resources east of the Treasure Valley
- Provide future load-service capacity to the Magic Valley from the Cedar Hill Substation
- Help meet the transmission needs of the future, including transmission needs associated with VERs
- Reduce transmission losses

- Improve transmission grid reliability
- Provide access to abundant renewable energy that will lead to a cleaner generating portfolio across the West

Phase 1 of the entire Gateway West project is expected to provide up to 1,500 MW of additional transfer capacity between Midpoint and Hemingway. The fully completed project would provide a total of 3,000 MW of additional transfer capacity. Idaho Power has a one-third interest in these capacity additions on certain segments of the overall project.

The Gateway West

and B2H projects are complementary and will provide upgraded transmission paths from the Pacific Northwest across Idaho and into eastern Wyoming.

More information about the Gateway West project can be found at gatewaywestproject.com.

Figure 5. Gateway West map

Idaho Power Segments

Idaho Power has a one-third interest in the segments between Midpoint and Hemingway (segment 8), Cedar Hill and Hemingway (segment 9), and Cedar Hill and Midpoint (segment 10). Further, Idaho Power has interest in the segment between Borah and Midpoint (segment 6), which is an existing transmission line operated at 345 kV but constructed at 500 kV.

The Gateway West transmission capacity between the Magic Valley and the Treasure Valley areas can relieve two primary transmission constraints: 1) transmission capacity between the Magic Valley and Treasure Valley (Midpoint West), and 2) transmission capacity between the Mountain Home area, and the Treasure Valley (Boise East). These transmission constraints limit the amount of new generation resources that can be sited on the Idaho Power system east of the Treasure Valley area. Planned coal exits from Jim Bridger and North Valmy open up some capacity on the paths that can also be used for new resources, but additional transmission capacity may be required depending on the resource portfolio.

The Midpoint to Hemingway 500 kV line (segment 8) between the Magic Valley and the Treasure Valley was modeled to relieve transmission congestion allowing new IRP resources to be added to the system. The Midpoint to Hemingway segment was modeled as being phased in as two distinct projects described below.

Figure 6. Gateway West map–Magic Valley to Treasure Valley segments (8 and 9)

2021 IRP Gateway West—Phase 1 (Partial Segment 8)

For the 2021 IRP, the company modeled a partial build phase of a Gateway West segment, the Midpoint to Hemingway #2 500 kV line (segment 8) as a possibility. The partial build phase would be a subset of segment 8 constructed between Hemingway and Mountain Home with the line constructed at 500 kV but operated at 230 kV. This Phase 1 partial segment increases the capacity of the Idaho Power transmission system, by approximately 700 MW, between Mountain Home and Boise required to support incremental resources sited to the east.

2021 IRP Gateway West—Phase 2 (Complete Segment 8)

Phase 2 would be to complete the second half of the Gateway West segment 8 project between Midpoint and Mountain Home. The line would be operated at 500 kV from Midpoint to

Hemingway after this phase is constructed. The total capacity provided by the complete segment 8 would increase the transmission capacity into the Treasure Valley by approximately 1,500 MW, which represents an additional 800 MW increase from Phase 1.

Depending on transmission capacity needs, the complete segment 8 could also be built in a single phase.

2021 IRP Gateway West Transmission Assumptions

The siting of new resources, such as wind and solar, on the Idaho Power system are limited by internal transmission constraints on the Idaho Power system between the Magic Valley and the Treasure Valley, in particular the Midpoint West and Boise East internal transmission paths. The 2021 IRP analysis determined the incremental resource additions that would trigger the need for Gateway West to transport energy from new resources to the Treasure Valley load center. Historical resource and load data and transmission service obligations were analyzed to determine the existing transmission commitments and available transmission capacity that could be utilized by new resources. For this determination the company assumed 75th percentile resource levels and 25th percentile system loads in the Magic Valley and Eastern Idaho. Planned unit exits from Valmy and Bridger power plants in the IRP portfolios open up capacity that can be utilized by new resources and are also part of the analysis.

Base with B2H Portfolio Gateway West Transmission Assumptions

As described in the B2H Benefits and Values section of this appendix, the transmission capacity on the Idaho Power operated Borah West and Midpoint West transmission paths will be upgraded to support additional east-to-west schedules and to enable PAC's usage of its B2H capacity. PAC will acquire 600 MW of east-to-west transmission assets across Borah West, Midpoint West, and Boise East for an ownership path to their B2H capacity, and PAC will terminate its existing 510 MW east-to-west transmission service across Idaho Power. Idaho Power can re-purpose the transmission previously reserved for PAC's transmission service for the integration of new resources. Table 14 below details the east-to-west Borah West and Midpoint West ownership, transmission service obligations, and Idaho Power net capacity for use before and after the B2H project.

Table 14. Idaho Power internal path capacity and ownership

	Path Rating E to W	Idaho Power Ownership E to W	PAC Ownership E to W	PAC Transmission Service E to W	Idaho Power Net Capacity E to W
Without B2H					
Boise East	~3700* MW	2610 MW	1090 MW	510 MW	2100 MW
Midpoint West	2800 MW	1710 MW	1090 MW	510 MW	1200 MW
Borah West	2557 MW	1467 MW	1090 MW	510 MW	957 MW
After B2H and Idaho Upgrades					
Boise East	~4250 MW	2560 MW	1690 MW	0 MW	2560 MW
Midpoint West	~3350 MW	1660 MW	1690 MW	0 MW	1660 MW
Borah West	~3180 MW	1490 MW	1690 MW	0 MW	1490 MW

* Rating assumes planned near-term rebuild of an existing 230 kV line.

Per the 2022 Term Sheet, the addition of B2H will come with 200 MW of capacity from Four Corners Substation in New Mexico to Populus Substation in eastern Idaho. Utilization of this capacity will consume some of the east-to-west capacity listed above to move it across southern Idaho to load. Offsetting some of the 200 MW Four Corners schedule will be the addition of BPA southeast Idaho customer network load located east of the paths detailed in Table 8. BPA southeast Idaho load increases the network load on the eastern side of the Idaho Power system and therefore reduces the east-to-west congestion. The net impact of the upgrades, PAC wheeling termination, Four Corners capacity, and BPA southeast Idaho network load, compared to a scenario without B2H and the associated 2022 Term Sheet, results in approximately 400 MW more available east-to-west transmission capacity in B2H portfolios than portfolios without the addition of B2H.

The Base with B2H portfolio includes 700 MW of new wind resources and 1,405 MW of new solar resources. These resources are assumed to be added on the Idaho Power transmission system east of the Treasure Valley. The stand-alone battery resources are assumed to be sited near the Treasure Valley load center, or co-located with the new wind and solar resources, and therefore do not require network transmission across southern Idaho to the Treasure Valley. The net approximate 400 MW of capacity gained by the internal east-to-west upgrades associated with B2H coupled with the exits of Valmy and Bridger allow the Preferred Portfolio (Base with B2H) resources to be integrated without requiring a Gateway West segment.

Base without B2H PAC Bridger Alignment Portfolio Gateway West Transmission Assumptions

The Base without B2H PAC Bridger Alignment portfolio includes 1,200 MW of new wind resources and 1,905 MW of new solar resources. Similar to the Base with B2H portfolio, it is assumed these resources would be sited on the Idaho Power transmission system east of the Treasure Valley and that stand-alone battery resources would be sited near the Treasure Valley load center or co-located with the new wind and solar resources. For this portfolio the upgrades detailed in the Borah West and Midpoint West Capacity Upgrades section, and the Gateway West partial segment 8 (project 1) would be required in 2027 and the Gateway West completed segmented 8 would be required in 2033. The additional amount of wind and solar and the 400 MW net reduction in available transmission capacity compared to the Preferred Portfolio (Base with B2H) necessitates the addition of the Gateway West projects to the portfolio.

SOUTHWEST INTERTIE TRANSMISSION PROJECT-NORTH

The Southwest Intertie Transmission Project-North (SWIP-North) is a proposed 275-mile 500 kV transmission project being developed by Great Basin Transmission, LLC which is an affiliate of LS Power. The SWIP-North connects Idaho Power's Midpoint Substation near Twin Falls, Idaho, and the Robinson Summit Substation near Ely, Nevada. The project would provide a connection to the One Nevada 500 kV Line (ON Line) which is an in-service segment between Robinson Summit and the Harry Allen Substation in the Las Vegas, Nevada, area. The two projects together are the combined SWIP project. The combined SWIP project is expected to have a bi-directional WECC-approved path rating of approximately 2,000 MW.

Figure 7. SWIP-North preliminary route

The addition of the SWIP-North segment would unlock additional capacity on the existing ON Line that connects northern and southern Nevada. Contractual ownership of capacity on SWIP-North would provide capacity rights to and from the Harry Allen Substation in the Las Vegas area. The Harry Allen Substation is connected to CAISO via the newly constructed DesertLink 500 kV line. The substation is also near the Desert Southwest market hub, Mead. Idaho Power's potential participation in the project could provide the company transmission access—past transmission congestion on NV Energy's system—from the Desert Southwest market and CAISO directly to Idaho Power. Figure 7 shows the SWIP-North Preliminary Route and the locations of the ON Line and DesertLink 500 kV lines to the south.

To determine a cost-estimate for SWIP-North, the company used publicly available cost data for similar lines recently constructed in Nevada and assumed that Idaho Power would own a 200-MW share of the south-to-north capacity.

Total Cost Estimate (200 MW share): $133 million with a pre-summer 2025 in-service date.

COMBINED MAJOR TRANSMISSION PROJECTS IN IDAHO

B2H, Gateway West, and SWIP North, when combined, can provide vast interregional connectivity for both load and resource diversity. Figure 8 below depicts the opportunity the combination of these projects can provide to Idaho Power, and the greater Western Interconnection.

Figure 8. Map of B2H, Gateway West, and SWIP North

2021 IRP PORTFOLIO TRANSMISSION COST ASSUMPTIONS

The transmission assumptions from the 2021 IRP Preferred Portfolio (Base with B2H) are listed in Table 15. The Base with B2H portfolio includes the 2026 addition of the B2H project including the Midline Series Capacitor Station, the 230 kV Hemingway Integration Projects, and Borah West and Midpoint West Upgrades to support increased east-to-west flows for PAC and Idaho Power. The capital costs in the table include Idaho Power AFUDC and 0% contingency.

Table 15. Preferred Portfolio (Base with B2H) transmission upgrades and capital costs

Upgrade	Year	Capital Costs
B2H (45.45% IPC Share)	2026	$425.2M
B2H Midline Series Capacitor Station (45.45% IPC Share)	2026	$10.3M
230 kV Hemingway Integration Projects	2026	$35.3M
Borah West and Midpoint West Upgrades*	2026	$46.8M

*Upgrades to jointly owned Idaho Power and PAC assets.

The transmission assumptions for the Base without B2H PAC Bridger Alignment portfolio (the least cost portfolio that did not include B2H) are listed in Table 16. This portfolio contains Gateway West phases in 2027 and 2033 to enable higher amounts of solar and wind resource additions to the system east of the Treasure Valley. The Gateway West projects deliver energy to Hemingway necessitating a larger connection between Hemingway and the Treasure Valley load area; consequently, the 230 kV Hemingway Integration Projects are also a required upgrade in this portfolio. Further, the Borah West and Midpoint West Upgrades are included in this portfolio as they are the initial lowest cost upgrades on the existing system. Absent any future agreement, PAC is assumed to participate in the upgrades at the existing Borah West and Midpoint West joint ownership percentages. This reduces the cost and capacity gained by Idaho Power from the upgrades. Again, the capital costs in the table include Idaho Power AFUDC and 0% contingency.

Table 16. Base without B2H PAC Bridger alignment transmission upgrades and capital costs

Upgrade	Year	Capital Cost
Gateway West Phase 1 (Partial Segment 8)	2027	$176.1M
230 kV Hemingway Integration Projects	2027	$35.3M
Borah West and Midpoint West Upgrades*	2027	$16.2M
Gateway West Phase 2 (Complete Segment 8)	2033	$176.1M

*Upgrades to jointly owned Idaho Power and PAC assets.

Transmission Line Estimates

Idaho Power has contracted with HDR to serve as the B2H project's third-party owners' engineer and prepare the B2H transmission line cost estimate. HDR has extensive industry experience, including experience serving as an owner's engineer for BPA for the last seven years. HDR has prepared a preliminary transmission line design that locates every tower and access road needed for the project. HDR used utility industry experience and current market values for materials, equipment, and labor to arrive at the B2H estimate. Material quantities and construction methods are well understood because the B2H project is utilizing BPA's standard tower and conductor design for 500 kV lines. BPA has used the proposed towers and conductor on hundreds of miles of lines currently in-service. HDR was the owner's engineer on recent BPA projects, so HDR is also familiar with the BPA towers and conductor the B2H project is using.

Substation Estimates

The northern terminus for B2H requires a new substation near Boardman, Oregon, to tap into the existing BPA 500 kV transmission network. BPA owns the land for the Longhorn Station and must complete all NEPA reviews and other legal requirements before making a final decision to construct Longhorn Station. BPA proposed the Longhorn Station to integrate certain wind projects in the immediate area. BPA has prepared the Longhorn Station cost estimate, based on its extensive experience designing and constructing substations.

The southern terminus for B2H is Idaho Power's Hemingway Substation, near Murphy, Idaho. The Hemingway Substation has an existing 500 kV connection between Idaho Power's Midpoint Substation (near Shoshone, Idaho) and PAC's Summer Lake Substation in Lake County, Oregon. Completed in 2013, the Hemingway Substation is designed to accommodate the B2H line terminal in the future. New equipment must be ordered and installed, but no station expansion will be required. Based on these expectations, Idaho Power prepared the Hemingway Substation cost estimate.

Calibration of Cost Estimates

The B2H estimate was reviewed and approved by BPA and PAC. BPA and PAC both have recent transmission line construction projects to calibrate against. The recent projects included the following:

- BPA: Lower Monumental–Central Ferry 500 kV line (38 miles, in-service 2015)
- BPA: Big Eddy–Knight 500 kV line (39 miles, in-service 2016)
- PAC: Sigurd to Red Butte 345 kV line (160 miles, in-service 2015)
- PAC: Mona to Oquirrh 500 kV line (100 miles, in-service 2013)

Additionally, in early 2017 Idaho Power visited with NV Energy and Southern California Edison to learn from each company's recent experience constructing 500 kV transmission lines in the

West. As part of the discussions with each company, Idaho Power calibrated cost estimates and resource requirements.

The two projects were as follows:

- NV Energy: ON Line project (235 miles, 500 kV, in-service 2014)
- Southern California Edison: Devers to Palo Verde (150 miles, 500 kV, in-service 2013)

Costs Incurred to Date

Approximately $125 million, including AFUDC, has been expended on the B2H project through December 31, 2021. The $125 million incurred through December 31, 2021, is included in the $1 to $1.2 billion total estimate. Idaho Power's share of the costs incurred to-date is included in B2H IRP portfolio modeling.

Additional Costs Applied to B2H

In addition to the base costs of the B2H project, the company also applied additional costs to the B2H project in the 2021 IRP modeling. These costs have been previously discussed in this appendix and are: 1) costs for local interconnection upgrades totaling approximately $35 million, and 2) costs for Borah West and Midpoint West upgrades necessary to facilitate the PAC asset exchange, detailed in the 2022 Term Sheet and B2H Project Partner Update section of this appendix, totaling approximately $47 million.

Cost-Estimate Conclusions

The cost estimate for B2H has been thoroughly vetted. Idaho Power used third-party contractors with industry experience, relied on PAC and BPA recent transmission line construction experience, and benchmarked against multiple recent high-voltage transmission line investments in the West to arrive at the B2H construction cost estimate. Material quantities and construction methods are well understood because the B2H project is using BPA's standard tower and conductor design for 500 kV lines. The cost estimate for the project will be further refined as the project design develops toward completion.

Transmission Revenue

The B2H transmission line project is modeled in AURORA as additional transmission capacity available for Idaho Power energy purchases from the Pacific Northwest. In general, for new supply-side resources modeled in the IRP process, surplus sales of generation are included as a cost offset in the AURORA portfolio modeling. Transmission wheeling revenues, however, are not included in AURORA calculations. To remedy this inconsistency, in the 2021 IRP, Idaho Power modeled incremental transmission wheeling revenue from non-native load customers as an annual revenue credit for B2H portfolios, representing a reduction in project costs and ultimately benefiting Idaho Power retail customers.

Idaho Power's transmission assets are funded by native load customers, network customers, and point-to-point transmission wheeling customers based on a ratio of each party's usage of the transmission system. For the 2021 IRP, Idaho Power modeled B2H assuming the company has a 45% ownership interest and is providing transmission service to BPA, with BPA transmission wheeling payments acting as a cost-offset to the overall B2H project costs. Idaho Power also modeled the change in PAC point-to-point usage. Portfolios involving B2H result in a higher FERC transmission rate than portfolios without B2H. Although B2H provides significant incremental capacity, and will likely result in increased transmission sales, Idaho Power assumed flat short-term and non-firm transmission sales volume as a conservative assumption.

Idaho Power's FERC transmission rate is calculated as follows:

$$Transmission\ Rate = \frac{Transmission\ Costs\ (\$)}{Transmission\ Usage\ (MW * year)}$$

Per the formula above, transmission costs will increase following the installation of B2H, and transmission usage will adjust with the company providing increased transmission service associated with additional BPA network load, and reduced transmission service corresponding to PAC's net point-to-point usage declining. To calculate the B2H cost offset annual revenue stream, the company calculated the difference between two scenarios:

1. The B2H third-party transmission revenues it would receive assuming the 2021 IRP Preferred Portfolio; and
2. the third-party transmission revenues it would receive in a case without the addition of B2H assuming PAC continues to utilize 510 MW of point-to-point service, and BPA finds an alternative long-term plan for serving its customers in southeast Idaho (B2H is currently the plan that they are pursuing).

The difference between these two scenarios represents the B2H cost offset annual revenue stream that was applied as a reduction to B2H overall costs.

Due to significant increase in capacity that B2H provides to the Idaho to Northwest path, Idaho Power believes firm, short-term firm, and non-firm usage of the Idaho Power transmission system by third parties could increase. This belief is supported by the over 1,000 MWs of transmission requests that the company has seen across the Idaho to Northwest path over the past 18 months. Additionally, Idaho Power's acquisition of 200 MW of bidirectional capacity to Four Corners, New Mexico will only further enhance the value of the company transmission system to third parties. These potential revenues would further reduce the cost of the project, however, to be conservative, Idaho Power assumed a constant transmission usage by third parties (no increase or decrease) from an average of usage over recent years.

RISK

Risk is inherent in any infrastructure development project. The sections below address various risks associated with the B2H project. Combining the analysis below with the risk analysis conducted in the 2021 IRP, B2H is the lowest-risk resource to meet Idaho Power's resource needs.

Capacity, Cost, and In-Service Date Risk

The company evaluated the following risks extensively in the 2021 IRP:

- **Capacity Risk:** As part of the 2021 IRP, the company looked at portfolio costs assuming the company can access 350 MW, 400 MW, 450 MW, 500 MW (the Preferred Portfolio), and 550 MW of capacity.
- **Cost Risk:** Evaluating cost risks to ensure cost-effectiveness (i.e., a tipping point analysis) is an important consideration when planning for a project.
- **In-Service Date Risk:** The current planned in-service date for B2H is prior to the summer of 2026. The company evaluated the impacts of a 2027 in-service date.

A description of each of these risks can be found in the 2021 IRP Chapter 10—Modeling Analysis and Results, starting on page 144 of the document.

Regarding cost risk, the 2021 IRP portfolio Net Present Value (NPV) cost for B2H is approximately $160 million (this is the NPV cost incurred within the 20-year planning window) assuming a 0% contingency amount. The difference between the Preferred Portfolio, and the best alternative portfolio that did not include B2H was approximately a $266 million NPV. Therefore, B2H costs could increase by nearly 165% and the project would remain cost effective.

Liquidity and Market Sufficiency Risk

This risk was partially addressed by the capacity risk evaluation detailed starting on page 144 of the 2021 IRP. As part of the 2021 IRP, the company looked at portfolio costs assuming the company can access 350 MW, 400 MW, 450 MW, 500 MW (the Preferred Portfolio), and 550 MW of capacity. Of note, should market capacity ever become limited, this will not reduce B2H's capacity. The company would have the flexibility to acquire or develop another resource in the Pacific Northwest, potentially in eastern Oregon, and repurpose B2H transmission capacity to continue to meet its customers' needs. As discussed in the Flexibility section of this appendix, a transmission line like B2H will facilitate the transfer of any generation technology, ensuring Idaho Power customers always have access to the most economic resources, regardless of the resource type.

Focusing on the market, the Pacific Northwest is a winter peaking region. Pacific Northwest utilities continue to install and build generation capacity to meet winter peak regional needs. Idaho Power operates a system with a summer peak. Idaho Power's peak typically occurs in the late June/early July timeframe. The Idaho Power summer peak aligns with the Mid-C hydro runoff conditions when the Pacific Northwest is flush with surplus power capacity. The existing transmission system between the Pacific Northwest and Idaho Power is constrained. Constructing B2H will alleviate this constraint and add 1,050 MW of total transfer capability between the Pacific Northwest and the Intermountain West region. The Pacific Northwest and Idaho Power will significantly benefit from the addition of transmission capacity between the regions. The Pacific Northwest has constructed power plants to meet winter needs and would benefit from selling energy to Idaho Power in the summer. Idaho Power needs generation capacity to serve summer peak load, and a transmission line to existing underutilized power plants is much more cost-effective than building a new power plant.

See the Market Overview section of this appendix for more information about the Mid-C market hub liquidity. Based on the risk assessment, Idaho Power believes sufficient market liquidity exists.

The following data points will address the market sufficiency risk.

Data Point 1: Peak Load Analysis from Table 8

Referencing Table 8 from the B2H Benefits and Values section, British Columbia and other utilities in the Pacific Northwest[18] have forecast 2030 winter peaks that exceed their forecast 2030 summer peaks by a combined 8,200 MW. Given the difference in seasonal peaks, coupled with Columbia runoff hydro conditions aligning with Idaho Power's summer peak, resource availability in the Pacific Northwest during Idaho Power's summer peak is highly likely.

Data Point 2: 2019 Pacific Northwest Loads and Resources Study—BPA

Idaho Power's review of recent regional resource adequacy assessments also included the *Pacific Northwest Loads and Resources Study* by the BPA (White Book). The most recent BPA adequacy assessment report was released October 2020 and evaluates resource adequacy from 2021 through 2030.[19] Idaho Power concludes from this analysis that: 1) summer capacity will be available in the future, and 2) additional summer capacity will likely be added as the region

[18] Load serving entities from Table 8 included in stated figure are Avista, BPA, British Columbia, Chelan, Douglas, Grant, PAC–West, Portland General, Puget Sound, Seattle City, and Tacoma.

[19] BPA. 2019 Pacific Northwest loads and resources study (2019 white book). Technical Appendix, Volume 2: Capacity Analysis. bpa.gov/p/Generation/White-Book/wb/2019-WBK-Technical-Appendix-Volume-2-Capacity-Analysis.pdf . Accessed November 24, 2021.

adds resources to meet winter peak demand. BPA considers regional load diversity (i.e., winter- or summer-peaking utilities) and expected monthly production from the Pacific Northwest hydroelectric system under the critical case water year for the region (1937). Canadian resources are excluded from the BPA assessment. New regional generating projects are included when those resources begin operating or are under construction and have a scheduled on-line date. Similarly, retiring resources are removed on the date of the announced retirement. Resource forecasts for the region assume the retirement of the following coal projects over the study period:

Table 17. Coal retirement forecast

Resource	Retirement Date
Centralia 1	December 1, 2020
Boardman	January 1, 2021
Valmy 1	January 1, 2022
Colstrip 1	June 30, 2022
Colstrip 2	June 30, 2022
Centralia 2	December 1, 2025
Valmy 2	January 1, 2026

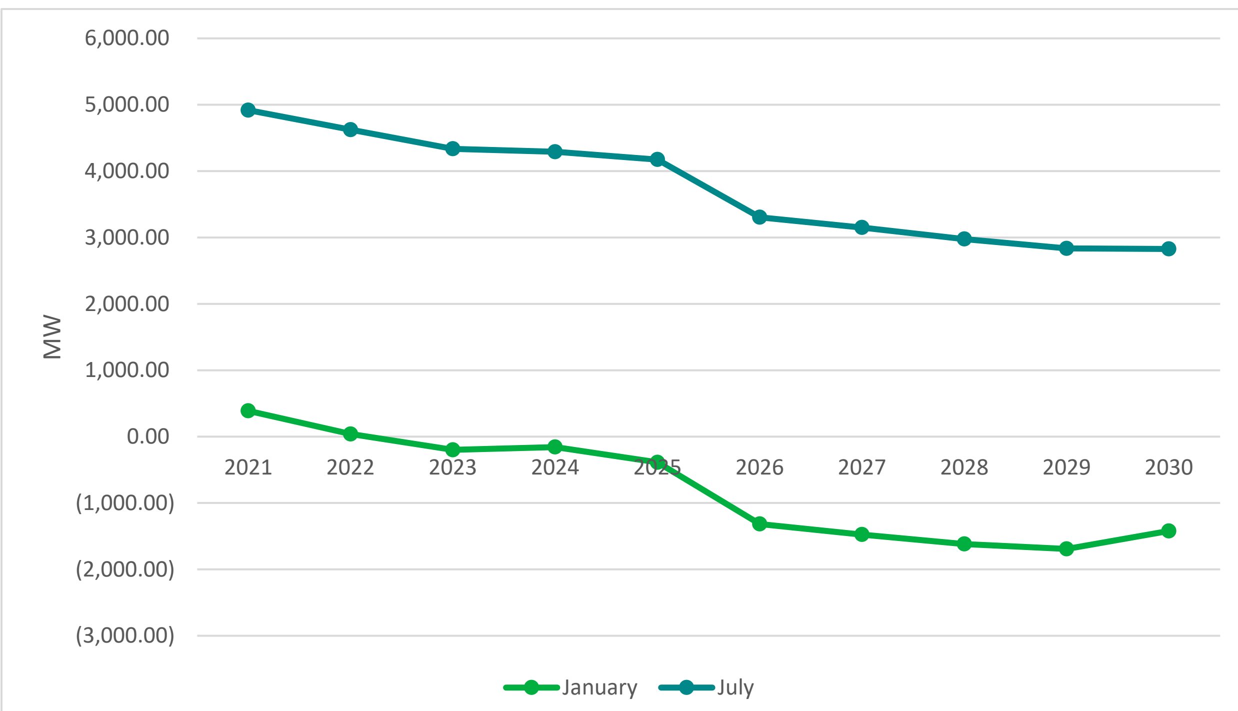


Figure 9. BPA white book PNW surplus/deficit one-hour capacity (1937 critical water year)

Data Point 3: FERC Form 714 Load Data

For illustrative purposes, Idaho Power downloaded peak load data reported through FERC Form 714 for the major Pacific Northwest entities in Washington and Oregon: Avista, BPA, Chelan County PUD, Douglas County PUD, Eugene Water and Electric Board, Grant County PUD, PGE, Puget Sound Energy, Seattle City Light, and Tacoma (PAC West data was unavailable). The coincident sum of these entities' total load is shown in Figure 10.

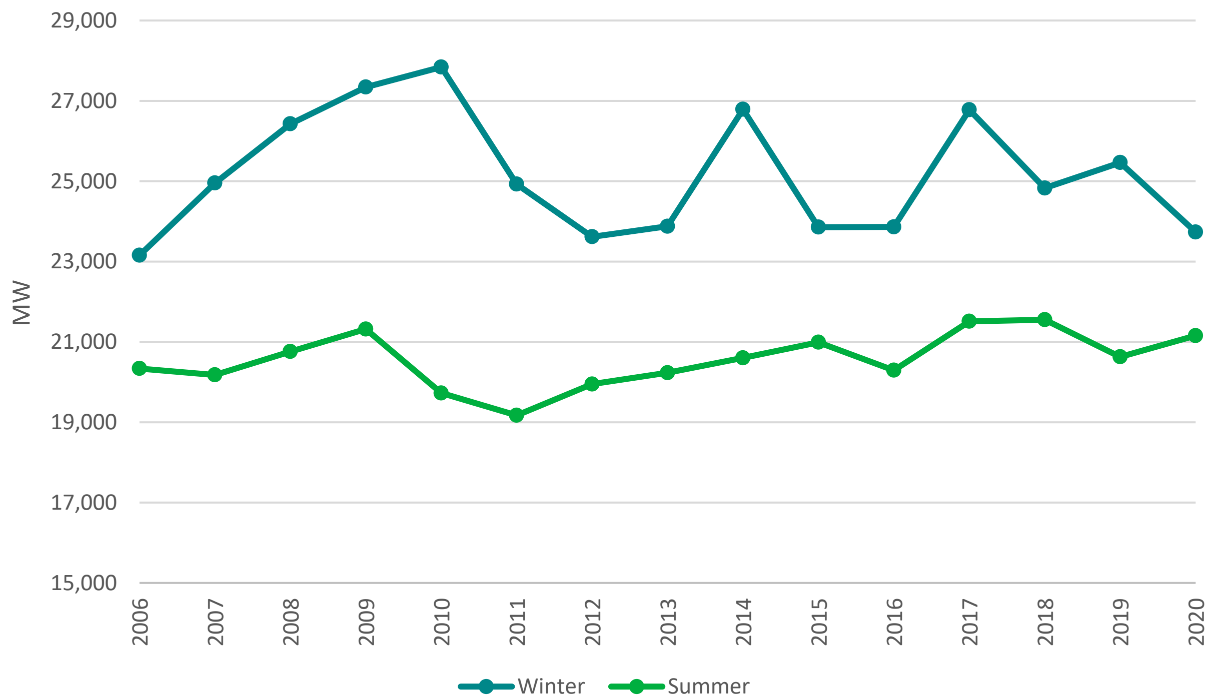


Figure 10. Peak coincident load data for most major Washington and Oregon utilities

Figure 10 illustrates a wide difference between historical winter and summer peaks for the Washington and Oregon area in the region. Other considerations, not depicted, include Canada's similar winter- to summer-peak load ratio (winter peaking), and the increased ability of the Pacific Northwest hydro system in late June through early July compared to the hydro system's capability in the winter (more water in early summer compared to winter).

Data Point 4: Northwest and California Renewable Portfolio Standards

The adoption of more aggressive Renewable Portfolio Standard (RPS) goals by states such as California, Oregon, and Washington will drive policy-driven resource additions. The RPS goals will also likely result in more solar generation throughout the region and additional dispatchable flexible ramping resources, such as battery storage. Solar and solar plus storage align very well with summer peak needs, but their value can be limited in the winter months. Meeting winter needs will require the Pacific Northwest region to overbuild these resources above the level to meet a similar a summer demand, which will continue to align well with Idaho Power looking to access summer energy from the market.

Data Point 5: Potential Resources from Northwest Utility IRPs

The 2021 PNUCC Northwest Regional Forecast includes a list of potential new resources reported by northwest utilities in their integrated resource plans to meet their own needs. The forecasted new resource list from the report is shown in Table 18. The list of resources includes 6,389 MW of planned new resources through 2031. As expected, the NW utilities are continuing to plan for growing winter peak demands by adding capacity resources. Many of these resource additions, such as solar and storage installations, will have a much higher Effective Load Carrying Capability (ELCC) for the summer season, furthering the depth of the market for the summer season.

Table 18. Potential New Resources Identified by Regional Utilities (PNUCC)*

Project	Year	Fuel/Tech	Nameplate (MW)	Utility
Kettle Falls upgrade	2026	Biomass	12	Avista
NW hydro slice	2031	Contract	75	Avista
Natural gas peaker	2027	Gas	85	Avista
Natural gas peaker	2027	Gas	126	Avista
Montana wind	2023	Wind	100	Avista
Montana wind	2024	Wind	100	Avista
Montana wind	2028	Wind	100	Avista
Cleanera Apex I	2021	Solar	80	NorthWestern Energy
Grizzly Wind	2021	Wind	79	NorthWestern Energy
Black Bear Wind	2021	Wind	79	NorthWestern Energy
ConEd Wheatland	2022	Wind	75	NorthWestern Energy
ConEd Pondera	2022	Wind	20	NorthWestern Energy
ConEd Teton	2022	Wind	19	NorthWestern Energy
Caithness Beaver Creek II	2021	Wind w. battery	60	NorthWestern Energy
Caithness Beaver Creek III	2021	Wind w. battery	60	NorthWestern Energy
MTSUN	TBD	Solar	80	NorthWestern Energy
Battery	2028	Battery	180	PacifiCorp
Battery	2029	Battery	435	PacifiCorp
Solar w. battery	2024	Solar w. battery	1,249	PacifiCorp
Solar w. battery	2029	Solar w. battery	359	PacifiCorp
Wind w. battery	2029	Wind w. battery	10	PacifiCorp
Non spec. capacity	2024	Capacity	237	Portland General Electric
Non spec. capacity	2026	Capacity	39	Portland General Electric
Non spec. capacity	2027	Capacity	76	Portland General Electric
Non spec. capacity	2028	Capacity	130	Portland General Electric
Non spec. capacity	2029	Capacity	213	Portland General Electric
Non spec. capacity	2030	Capacity	254	Portland General Electric
Non spec. renewable	2024	Renewable	362	Portland General Electric
Non spec. renewable	2025	Renewable	233	Portland General Electric
Non spec. renewable	2029	Renewable	67	Portland General Electric
Battery	2022-2025	Battery	75	Puget Sound Energy
Battery	2026-2030	Battery	125	Puget Sound Energy
Flexible capacity	2026-2030	Capacity	237	Puget Sound Energy
Non spec. renewable	2022-2025	Renewable	600	Puget Sound Energy
Non spec. renewable	2026-2030	Renewable	1,100	Puget Sound Energy
Solar	2022-2025	Solar	80	Puget Sound Energy
Solar	2026-2030	Solar	150	Puget Sound Energy
Capacity product	2020-2024	Contract	25	Snohomish County PUD
Dispatchable capacity	2028	Capacity	120	Snohomish County PUD
Total (Nameplate)			**6,389**	

*PNUCC-2021-Northwest-Regional-Forecast-Final.pdf

Market Sufficiency and Liquidity Conclusions

The analysis summarized above and in the Markets section of this report provide strong evidence that there will be sufficient resources in the future to utilize the B2H transmission line.

Siting Risk

Any new infrastructure projects, from generation projects to transmission lines, comes with siting risk. The BLM ROD, which was released on November 17, 2017, was a significant milestone in the B2H project development and greatly minimized siting risk by authorizing the project on 85.6 miles of BLM-administered land. The United States Forest Service also issued a ROD authorizing the project on 8.6 miles of National Forest land in 2018, and the United States Navy issued a ROD in 2019 authorizing the project on 7.1 miles of Navy land. The BLM and Forest Service RODs were upheld by the United States District Court for the District of Oregon.[20]

The issuance of a site certificate by the Oregon EFSC is the next major step in the siting process. In 2020, ODOE issued its Proposed Order recommending approval of the project. That Proposed Order, however, is being challenged by third-parties in an ongoing Contested Case proceeding and will ultimately be subject to review and approval by EFSC, and the EFSC's decision will be subject to appeal before the Oregon Supreme Court. Until EFSC makes its final decision on the Site Certificate, which Idaho Power expects by the end of 2022, and any appeal is resolved, there remains some siting risk.

Schedule Risk

As of the date of this appendix, Idaho Power's scheduled B2H in-service date is 2026 or later. At a high level, remaining activities prior to energization are: permitting, preliminary construction, material procurement, and construction.

As noted above, the permitting phase of the project is ongoing. For federal permitting, the B2H project achieved the biggest schedule milestone to date with the release of BLM's ROD on November 17, 2017, and subsequent ROW grant in January 2018 authorizing the project on BLM-administered lands. The United States Forest Service ROD was issued in November 2018 and a right-of-way easement was issued in May 2019. A Navy ROD was issued in September 2019 and a Navy easement was issued in May 2020. The project is on track to receive the federal notice to proceed in 2023.

For the State of Oregon permitting process, the B2H project also achieved a considerable milestone in summer 2017 with the submittal of the Amended Application for Site Certificate to

[20] Stop B2H Coalition v. Bureau of Land Management, No. 2:19-cv-1822-SI, Order and Opinion (D. Or. August 4, 2021).

the ODOE and an application completeness determination from ODOE in fall 2018. ODOE issued a Proposed Order in July 2020, and EFSC is expected to issue its decision on the Site Certificate in 2022. The EFSC permitting process is a critical path schedule activity. Schedule risk exists for the EFSC permitting process if the EFSC does not issue a Site Certificate in 2022.

With the receipt of the BLM ROD and ROW easement, and a Proposed Order from ODOE, sufficient route certainty exists to continue with preliminary construction tasks. At the time of writing, Idaho Power is actively working on the following activities: detailed design, ROW option acquisition, legal surveys, and geotechnical investigation. Construction activities are expected to commence in 2023 with the expected project in-service date in 2026.

Catastrophic Event Risk

As detailed in B2H Design section of this appendix, the B2H transmission line is designed to withstand a variety of extreme weather conditions and catastrophic events. Like most infrastructure, the B2H project is susceptible to direct physical attack. However, unlike some other supply-side resources, B2H adds to the resiliency of the electrical grid by providing additional capacity and an additional path to transfer energy throughout the region should a physical attack or other catastrophic event occur elsewhere on the system.
Additionally, Idaho Power also keeps a supply of emergency transmission towers that can be quickly deployed to replace a damaged tower, allowing the transmission line to be quickly returned to service.

PROJECT ACTIVITIES

Schedule Update

Permitting

The B2H projected achieved a major milestone with the release of the BLM ROD on November 17, 2017, and the ROW grant on January 9, 2018. These actions formalized the conclusion of the siting process and federally required NEPA process. The BLM ROD and ROW grant provides the B2H project the ability to site the project on BLM-administered land. The BLM-led NEPA process took nearly 10 years to complete and involved extensive stakeholder input. Refer to the Project History and Route History sections of this report for more information on project history and public involvement. With the issuance of the United States Forest Service ROD and easement, and the issuance of the United States Navy ROD, all major federal decision records have been achieved.

For the State of Oregon permitting process, Idaho Power submitted the Amended Application for Site Certificate to the ODOE in summer 2017 and ODOE issued a Proposed Order in July 2020. A decision on the Site Certificate from the EFSC is expected in 2022.

The NEPA and EFSC processes are separate and distinct permitting processes and not necessarily designed to work simultaneously. At a high level, the NEPA EIS process evaluates reasonable alternatives to determine the best alternative (the Agency Preferred Alternative) at the end of the process. Comparative analysis is conducted at a “desktop” level. Information is brought into the process on a phased approach. Detailed analysis must be conducted on the final route prior to construction, generally once final design is complete.

The Oregon EFSC process is a standards-based process based on a fixed site boundary. For a linear facility, like a transmission line, the process requires the transmission line boundary to be established (a route selected) and fully evaluated to determine if the project meets established standards. The practical effect of the EFSC standards-based process required the NEPA process be far enough along to conduct field studies and other technical analyses to comply with standards. Idaho Power conducted field surveys and prepared the EFSC application in parallel with the NEPA process. The EFSC application is lengthy, coming in at over 20,000 pages.

Post-Permitting

To achieve an in-service date in 2026, preliminary construction activities have commenced parallel to EFSC permitting activities. Preliminary construction activities include, but are not limited to, the following:

- Geotechnical explorations
- Detailed ground surveys

- LiDAR aerial mapping
- Sectional surveys
- ROW option acquisition activities
- Detailed design
- Construction bid package development and construction contractor selection

After the Oregon permitting process and preliminary construction activities conclude, construction activities can commence. Construction activities include, but are not limited to, long-lead material acquisition, transmission line construction, and substation construction. The preliminary construction activities must commence several years prior to construction. The material acquisition and construction activities are expected to take approximately 3 years. The specific timing of each of the preliminary construction and construction activities will be coordinated with the project coparticipants.

CONCLUSION

As the B2H project nears its construction phase, the 2021 IRP shows that the B2H project remains a key component of the company's Preferred Portfolio of future resources. Additionally, project certainty continues to grow with Idaho Power, PAC, and BPA executing a 2022 Term Sheet related to the B2H project on January 18, 2022. The parties entered this 2022 Term Sheet after jointly funding the permitting of the B2H project over the past decade and over two years of discussions related to next steps associated with the B2H project.

As part of the 2022 Term Sheet, BPA will transition out of its role as a joint B2H permitting coparticipant and will instead take transmission service from Idaho Power to serve its southeast Idaho customers. Idaho Power will increase its B2H ownership to 45.45% by acquiring BPA's B2H capacity. Idaho Power's B2H capacity will increase from an average of 350 MW west-to-east to 750 MW west-to-east, and Idaho Power will utilize a portion of its increased B2H capacity to provide BPA transmission service across southern Idaho.

As part of the larger transaction, Idaho Power and PAC also plan to complete an asset exchange to align transmission ownership with each party's long-term strategy. Idaho Power will acquire PAC transmission assets and their related capacity sufficient to enable Idaho Power to utilize 200 MW of bidirectional transmission capacity between the Idaho Power system (Populus) and Four Corners Substation in New Mexico. Idaho Power will also acquire PAC assets around the Goshen area necessary to provide transmission service to BPA to serve their southeast Idaho customers. Idaho Power will be relieved of its 510 MW of transmission service obligations to PAC across southern Idaho, freeing up capacity the company plans to utilize to integrate additional southern Idaho renewable resources.

This B2H 2021 IRP appendix provides context and details that support evaluating the B2H transmission line project as a supply-side resource, explores many of the ancillary benefits offered by the transmission line, and considers the risks and benefits of owning a transmission line connected to a market hub in contrast to direct ownership of a traditional generation resource.

As discussed in this report, once operational, B2H will provide Idaho Power increased access to reliable, clean, low-cost market energy purchases from the Pacific Northwest. B2H (including early identification of need that ultimately became the project) has been a cost-effective resource identified in each of Idaho Power's IRPs since 2006 and continues to be a cornerstone of Idaho Power's 2021 IRP Preferred Portfolio.

The B2H project brings additional benefits beyond cost-effectiveness. The B2H project will increase the efficiency, reliability, and resiliency of the electric system by creating an additional pathway for energy to move between major load centers in the West. The B2H project also provides the flexibility to integrate renewable energy and move existing resources during times of congestion, benefiting customers throughout the region. Idaho Power believes B2H provides value to the system beyond any individual resource because it enhances the flexibility of the existing system and facilitates the delivery of cost-effective resources not only to Idaho Power customers, but also to customers throughout the Pacific Northwest and Mountain West regions.

The company must demonstrate a need for the project before EFSC will issue a Site Certificate authorizing the construction of a transmission line. Pursuant to EFSC's least-cost plan rule, the need demonstration can be met through a commission acknowledgement of the resource in the company's IRP.[21] The OPUC has already acknowledged the construction of B2H in Idaho Power's 2017 and 2019 IRPs. Idaho Power asks the OPUC to confirm its acknowledgement of B2H in the company's 2021 IRP.

[21] OAR 345-023-0020(2).

Appendix D-1. Transmission line alternatives to the proposed B2H 500 kV transmission line

Table D-1

Comparison of Transmission Line Capacity Scenarios—New Lines from Longhorn to Hemingway

Scenario	Line Capacity[1]	Potential Path 14 West-East Increase[2]	Losses on New Circuit(s)[3]
a. Longhorn to Hemingway 230 kV single circuit	956 MW	525 MW	10.8%
b. Longhorn to Hemingway 230 kV double circuit	1,912 MW	915 MW	9.5%
c. Longhorn to Hemingway 345 kV single circuit	1,434 MW	730 MW	6.6%
d. Longhorn to Hemingway 500 kV single circuit	3,214 MW	1,050 MW	4.2%
e. Longhorn to Hemingway 500 kV—two separate lines	6,428 MW	2,215 MW	3.7%
f. Longhorn to Hemingway 500 kV double circuit	6,428 MW	1,235 MW	2.9%
g. Longhorn to Hemingway 765 kV single circuit	4,770 MW	1,200 MW	2.4%

1 Line Capacity is the thermal rating of the assumed conductors and does not account for system limitations of voltage, stability, or reliability requirements.

2 Potential Rating is based upon study results to date to meet reliability design requirements for the WECC ratings processes, not including simultaneous interaction studies.

3 Estimated Losses are percent losses for the new line at the Potential Rating loading level. Annual energy losses are dependent on total system loss reductions. All of the scenarios would likely yield a total system loss reduction for the flow levels above.

Table D-2

Comparison of Transmission Line Capacity Scenarios—Rebuild Existing Lines to the Northwest

Scenario	Line Capacity[1]	Potential Path 14 Increase[2]	Losses on New Circuit(s)[3]	Length of Line/ New ROW[4]
h. Replace Oxbow-Lolo 230 kV with Hatwai–Hemingway 500 kV	3,214 MW	430 MW W-E 675 MW E-W	3.8%	255 Miles/136 Miles
i. Replace Oxbow-Lolo 230 kV with Hatwai–Hemingway 500 kV—No double circuiting with existing lines	3,214 MW	710 MW W-E 745 MW E-W	4.1%	255 Miles/167 Miles
j. Replace Walla Walla to Brownlee 230 kV with Sacajawea Tap–Hemingway 500 kV	3,214 MW	400 MW W-E 675 MW E-W	3.5%	288 Miles/150 Miles
k. Replace Walla Walla to Pallette 230 kV with Sacajawea Tap–Hemingway 500 kV—No double circuiting with existing lines	3,214 MW	720 MW W-E 730 MW E-W	3.8%	288 Miles/181 Miles
l. Build double circuit 500 kV/230 kV line from McNary to Quartz. Build 500kV from Quartz to Hemingway.	3,214 MW	765 MW W-E 870 MW E-W	3.9%	298 Miles/168 Miles

1 Line Capacity is the thermal rating of the assumed conductors and does not account for system limitations of voltage, stability, or reliability requirements.

2 Potential Rating is based upon study results to date to meet reliability design requirements for the WECC ratings processes, not including simultaneous interaction studies.

3 Estimated Losses are percent losses for the new line at the Potential Rating west-east loading level. Annual energy losses are dependent on total system loss reductions. All of the scenarios would likely yield a total system loss reduction for the flow levels above.

4 In addition to utilizing existing 230 kV right-of-way (“ROW”), each of the scenarios above will require new ROW to be obtained.

Appendix D-2. B2H project history, public participation, project activities, route history, and a detailed list of notable project milestones

B2H Project History

The B2H project originated from Idaho Power's 2006 IRP. The 2006 IRP specified 285 MW of additional transmission capacity, increasing Idaho Power's connection to the Pacific Northwest power markets, as a resource in the preferred resource portfolio. A project had not been fully vetted at that time but was described as a 230 kV transmission line between McNary Substation and Boise. After the initial identification in the 2006 IRP, Idaho Power evaluated numerous capacity upgrade alternatives. Considering distance, cost, capacity, losses, and substation termination operating voltages, Idaho Power determined a new 500 kV transmission line between the Boardman, Oregon, area, and the proposed Hemingway 500 kV Substation would be the most cost-effective method of increasing capacity. Refer to Appendix D-1 for more information on the upgrade options considered.

Transmission capacity, especially at 500 kV, can be described as "lumpy" because capacity increments are relatively large between the different transmission operating voltages. In the 2009 IRP, Idaho Power assumed 425 MW of capacity, which was 50% of the assumed total rating. Idaho Power's long-standing preference was to find a partner or partners to construct B2H with to take advantage of economies of scale. In the 2011 IRP, Idaho Power assumed 450 MW of capacity. In 2012, Idaho Power achieved two major milestones: 1) PAC and BPA officially joined the B2H project as permitting coparticipants, and 2) Idaho Power received a formal capacity rating for the B2H project via the WECC Path Rating Process (more on this process later in the Capacity Rating–WECC Rating Process section). In the 2013 IRP, Idaho Power began to use the negotiated capacity from the permitting agreement: 500 MW in the summer and 200 MW in the winter, a yearly average of 350 MW, for a cost allocation of 21% of the total project. Idaho Power used the same 21% interest in the 2015, 2017, and 2019 IRPs.

At the beginning of 2022, Idaho Power, PAC, and BPA executed a Non-Binding Term Sheet (2022 Term Sheet) that addresses B2H ownership, transmission service considerations, and asset exchanges. As part of the 2022 Term Sheet, BPA will transition out of its role as a joint B2H permitting partner and will instead take transmission service from Idaho Power to serve its customers. Idaho Power will increase its B2H ownership to 45.45% by acquiring BPA's B2H capacity and will utilize a portion of this increased capacity to provide BPA transmission service across southern Idaho.

In the 2021 IRP, Idaho Power modeled B2H assuming the 2022 Term Sheet specified 45.45% project ownership share.

B2H Public Participation

The B2H project development has involved considerable stakeholder interaction since its inception. Idaho Power has hosted and participated in almost 300 public and stakeholder meetings with an estimated 4,500+ participants. After approximately a year of public scoping in 2008, Idaho Power paused the federal and state review process and initiated a year-long comprehensive public process to gather more input. This community advisory process (CAP) took place in 2009 and 2010. The four objectives and steps of the CAP were as follows:

1. Identify community issues and concerns.
2. Develop a range of possible routes that address community issues and concerns.
3. Recommend proposed and alternate routes.
4. Follow through with communities during the federal and state review processes.

Through the CAP, Idaho Power hosted 27 Project Advisory Team meetings, 15 public meetings, and 7 special topic meetings. In all, nearly 1,000 people were involved in the CAP, either through Project Advisory Team activities or public meetings.

Ultimately, the route recommendation from the CAP was the route Idaho Power brought into the NEPA process as the proponent-recommended route. The NEPA process included additional opportunities for public comment at major milestones, and Idaho Power worked with landowners and communities along the way. Ultimately, the route selected through the NEPA process was based on the BLM's analysis and public input. For more information, please visit the B2H website.

Throughout the BLM's NEPA process, including development of the Draft Environmental Impact Statement (EIS), issued December 19, 2014, and prior to the Final EIS, issued November 22, 2016, Idaho Power worked with landowners, stakeholders, and jurisdictional leaders on route refinements and to balance environmental impacts with impacts to farmers and ranchers. For example, Idaho Power met with the original "Stop Idaho Power" group in Malheur County to help the group effectively comment and seek change from the BLM when the Draft EIS indicated a preference for a route across Stop Idaho Power stakeholder lands. BLM's decision was modified, and the route moved away from an area of highly valued agricultural lands in the Final EIS almost two years later.

Idaho Power worked with landowners in the Baker Valley, near the National Historic Oregon Trail Interpretive Center (NHOTIC), to move an alternative route along fence lines to minimize impacts to irrigated farmland, where practicable. This change was submitted by the landowners and included in the BLM's Final EIS and ROD (issued November 17, 2017). Another change in Baker County was in the Burnt River Canyon and Durkee area, where Idaho Power worked with the BLM and affected landowners to find a more suitable route than what was initially preferred in the Draft EIS. Idaho Power is still working with landowners and local jurisdictional leaders to microsite in these areas to minimize impacts.

Unfortunately, the route preferences of Idaho Power and the local communities aren't always reflected in the BLM's Agency Preferred route. For example, Idaho Power had worked in the Baker County area to propose a route on the backside of the NHOTIC (to the east) to minimize visual impacts, and in the Brogan area, to avoid landowner impacts. However, both route variations went through priority sage grouse habitat and were not adopted in BLM's Agency Preferred route.

However, Idaho Power worked with Umatilla County, local jurisdictional leaders, and landowners to identify a new route through the entire county, essentially moving the line further south and away from residences, ranches, and certain agriculture. This southern route variation through Umatilla County was included the BLM's Agency Preferred route.

At the urging of local landowners along Bombing Range Road in Morrow County, Idaho Power has been working with local jurisdictional leaders, delegate representatives, farmers, ranchers, and other interested parties to gain the Navy's consideration of an easement along the eastern edge of the Boardman Bombing Range. This cooperative effort with the local area has benefited the project, providing an approach that meets the interests and common good for all the noted parties in the local area. A major milestone was achieved when the United States Navy issued a Record of Decision for the proposed route in September 2019.

Finally, in Union County Idaho Power worked with local jurisdictional leaders, stakeholder groups, such as the Glass Hill Coalition and some members of StopB2H (prior to that group's formation) to identify new route opportunities. The Union County B2H Advisory Commission agreed to submit a route proposal to the BLM that followed existing high-voltage transmission lines, which was later identified as the Mill Creek Alternative. At the same time, Idaho Power met with a large landowner to adjust the Morgan Lake Alternative route to minimize impacts. Idaho Power understood that both the Mill Creek and Morgan Lake route variations were favored over BLM's Agency Preferred Alternative (referred to as the Glass Hill Alternative) by local landowners, the Glass Hill Coalition, several stakeholders, and the Confederated Tribe of the Umatilla Indian Reservation due to concerns of impacts on areas that had no prior development.

Idaho Power continued support of the community-favored routes in its Application for Site Certificate filed with ODOE in September 2018. Idaho Power will work with Union County and local stakeholders to determine the route preference between the Morgan Lake and Mill Creek alternatives. As of the date of the filing of the 2021 IRP, Idaho Power understands that the

Morgan Lake route alternative, on balance, appears to be preferred by the majority of the groups previously identified.

Project Activities

Below is a summary of notable activities by year since project inception.

2006

Idaho Power files its IRP with a transmission line to the Pacific Northwest identified in the preferred resource portfolio.

2007

Idaho Power analyzes the capacity and cost of different transmission line operating voltages and determines a new 500 kV transmission line to be the most cost-effective option to increase capacity and meet customer needs. Idaho Power files a Preliminary Draft Application for Transportation and Utility Systems and Facilities on Federal Lands. Idaho Power scopes routes.

2008

Idaho Power submits application materials to the BLM. Idaho Power submits a Notice of Intent to the EFSC. The BLM issues a Notice of Intent to prepare an EIS; officially initiating the BLM-led federal NEPA process. Idaho Power embarks on a more extensive public outreach program to determine the transmission line route.

2009

Idaho Power pauses NEPA and EFSC activities to work with community members throughout the route as part of the CAP to identify a proposed route that would be acceptable to both Idaho Power and the public. Forty-nine routes and/or route segments were considered through CAP.

2010

The CAP concludes. Idaho Power resubmits a proposed route to the BLM based on input from the CAP. The BLM re-initiates the NEPA scoping process and solicits public comments. Idaho Power publishes its B2H Siting Study. Idaho Power files a Notice of Intent with EFSC.

2011

Additional public outreach resulted in additional route alternatives submitted to the BLM. The Obama Administration recognizes B2H as one of seven national priority projects.[22]

[22] obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/interagency-rapid-response-team-for-transmission

2012

The ODOE conducts informational meetings and solicits comments. The ODOE issues a Project Order outlining the issues and regulations Idaho Power must address in its Application for Site Certificate. Additional public outreach and analysis resulted in route modifications and refinements submitted to the BLM. Idaho Power issues a Siting Study Supplement. Idaho Power conducts field surveys for the EFSC application. WECC adopts a new Adjacent Transmission Circuits definition with a separation distance of 250 feet, which would later modify routes in the EIS process. Idaho Power receives a formal capacity rating from WECC.

2013

Public meetings are held. Idaho Power submits its Preliminary Application for Site Certificate to the ODOE. The BLM releases preliminary preferred route alternatives and works on a Draft EIS.

2014

The BLM issues a Draft EIS identifying an Agency Preferred Alternative. The 90-day comment period opens. Idaho Power conducts field surveys for EFSC application.

2015

The BLM hosts open houses for the public to learn about the Draft EIS, route alternatives, environmental analysis. The BLM reviews public comments. Idaho Power notifies the BLM of a preferred termination location, Longhorn Substation. Idaho Power submits an application to the Navy for an easement on the Naval Weapons System Training Facility in Boardman. Idaho Power conducts field surveys for the EFSC application.

2016

Idaho Power submits a Draft Amended Application for Site Certificate to the ODOE for review. The BLM issues a Final EIS identifying an environmentally preferred route alternative and an Agency Preferred route alternative. Idaho Power incorporates the Agency Preferred route alternative into the EFSC application material. Idaho Power collaborates with local area stakeholders to find a routing solution on Navy-owned land. Idaho Power submits a revised application to the Navy. Idaho Power conducts field surveys for the EFSC application.

2017

Idaho Power submits an Amended Application for Site Certificate to the ODOE. The BLM issues a Record of Decision.

2018

ODOE and Idaho Power conduct public meetings after ODOE determined the Application for Site Certificate was complete. The Oregon PUC issues Order No. 18-176 in Docket No. LC 68 specifically acknowledging Idaho Power's 2017 IRP and action items related to B2H. The United States Forest Service issues its ROD. Idaho Power prepares and submits a Geotechnical Plan of Development to the BLM for approval.

2019

The United States Forest Service issues right-of-way (ROW) easement. ODOE issues a Draft Proposed Order (DPO). The United States Navy issues its ROD. BPA issues a ROD for moving the existing 69 kV line from Navy property to accommodate B2H. Idaho Power coordinates with BLM on Geotechnical Plan of Development.

2020

The United States Navy issues an easement for the B2H project. Based on the DPO, ODOE issues a Proposed Order and notice for Contested Case. Preparations begin for several pre-construction activities, which include completing LiDAR (aerial mapping) for the entire B2H project route and preparations for initiating detailed design.

2021

Idaho Power and reviewing agencies continue to meet with interested groups, affected landowners, community leaders, and elected officials. Idaho Power continues to conduct fieldwork to inform the state and federal review processes. The BLM continued NHPA Section 106 consultation. The ODOE continued with its contested case proceeding. A federal court ruled against a lawsuit brought against the BLM and United States Forest Service (USFS) regarding their ROD for B2H. Detailed design, geotechnical investigation, right-of-way option acquisition, and survey work begins.

B2H Route History

As stated previously, the need for the B2H project was first identified in the 2006 IRP. At that time, the transmission line was contemplated as a line between Boise and McNary. The project evolved into a 500 kV line between the Boardman area and the Hemingway Transmission Station. During scoping and the CAP process, a considerable number of routes through western, central, and eastern Oregon, and southern Washington were considered to connect Hemingway and the Boardman area. Figure D-1 is a snapshot the routes considered during this timeframe.

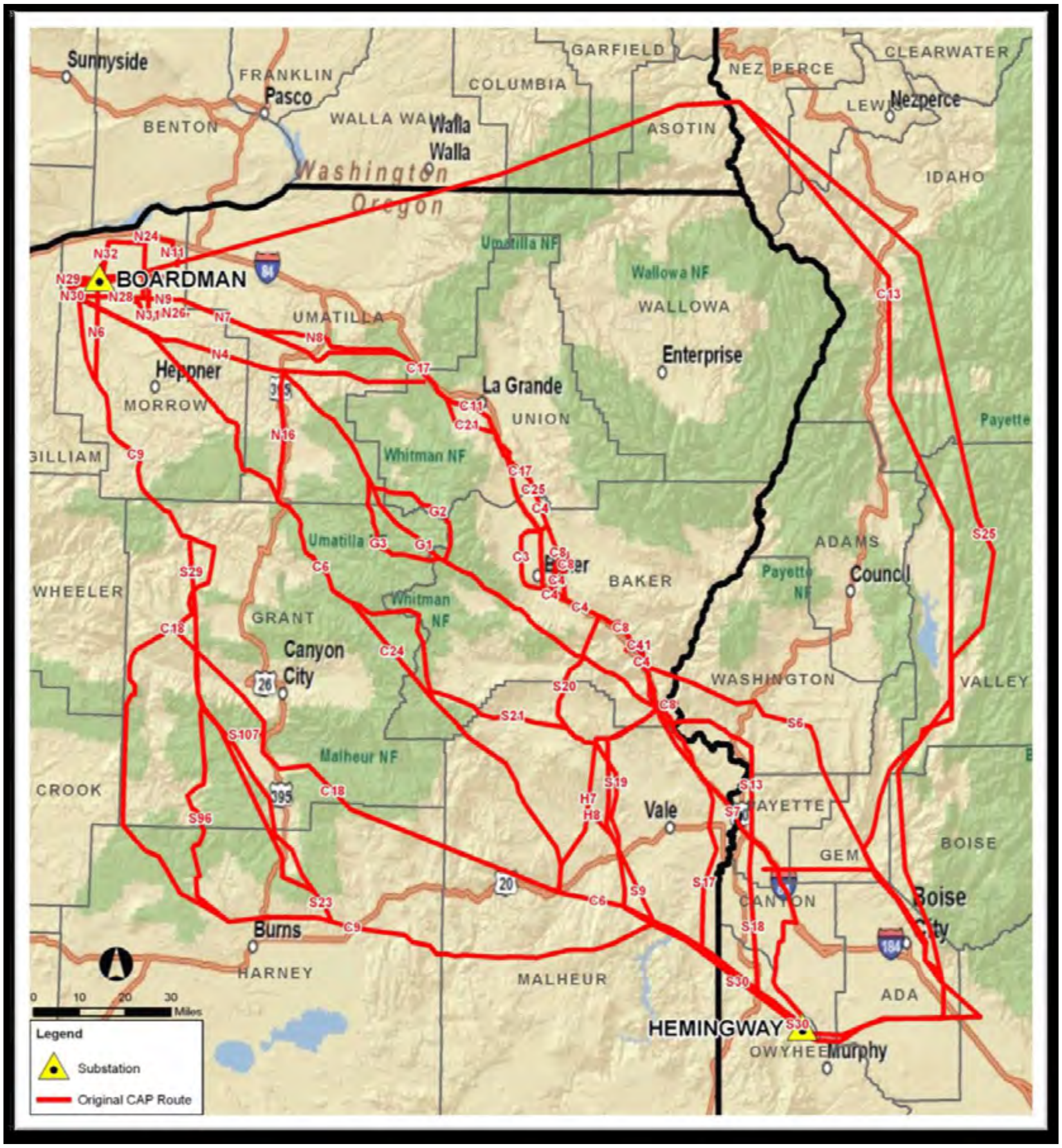


Figure D-1. Routes developed by the Community Advisory Process teams (2009 timeframe)

The CAP process resulted in Idaho Power submitting the route shown in Figure D-2 as the company's proposed route in the BLM-led NEPA process.

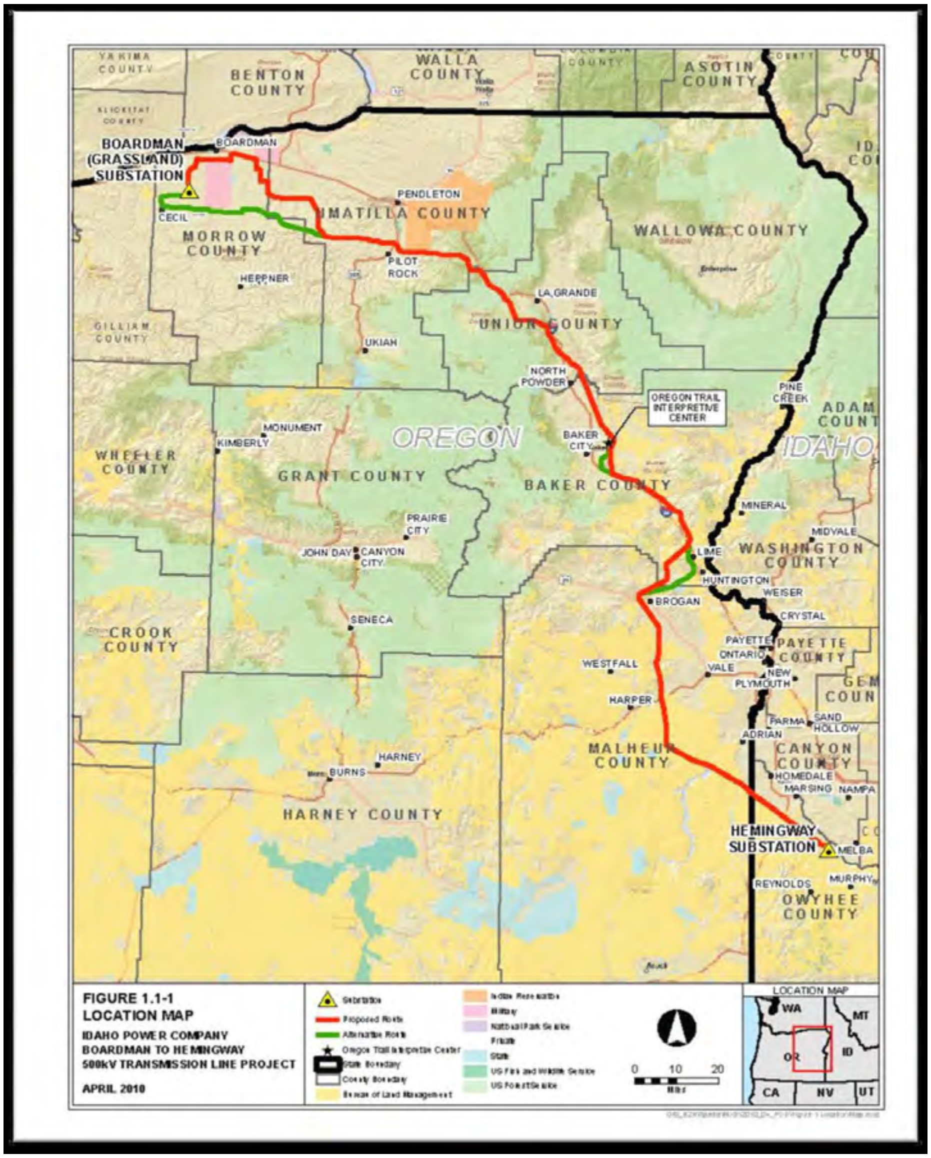


Figure D-2. B2H proposed route resulting from the Community Advisory Process (2010 timeframe)

The BLM considered Idaho Power's proposed route, along with a few other reasonable alternative routes, in the NEPA process. Figure D-3 shows the route alternatives and variations considered in the BLM's November 2016 Final EIS.

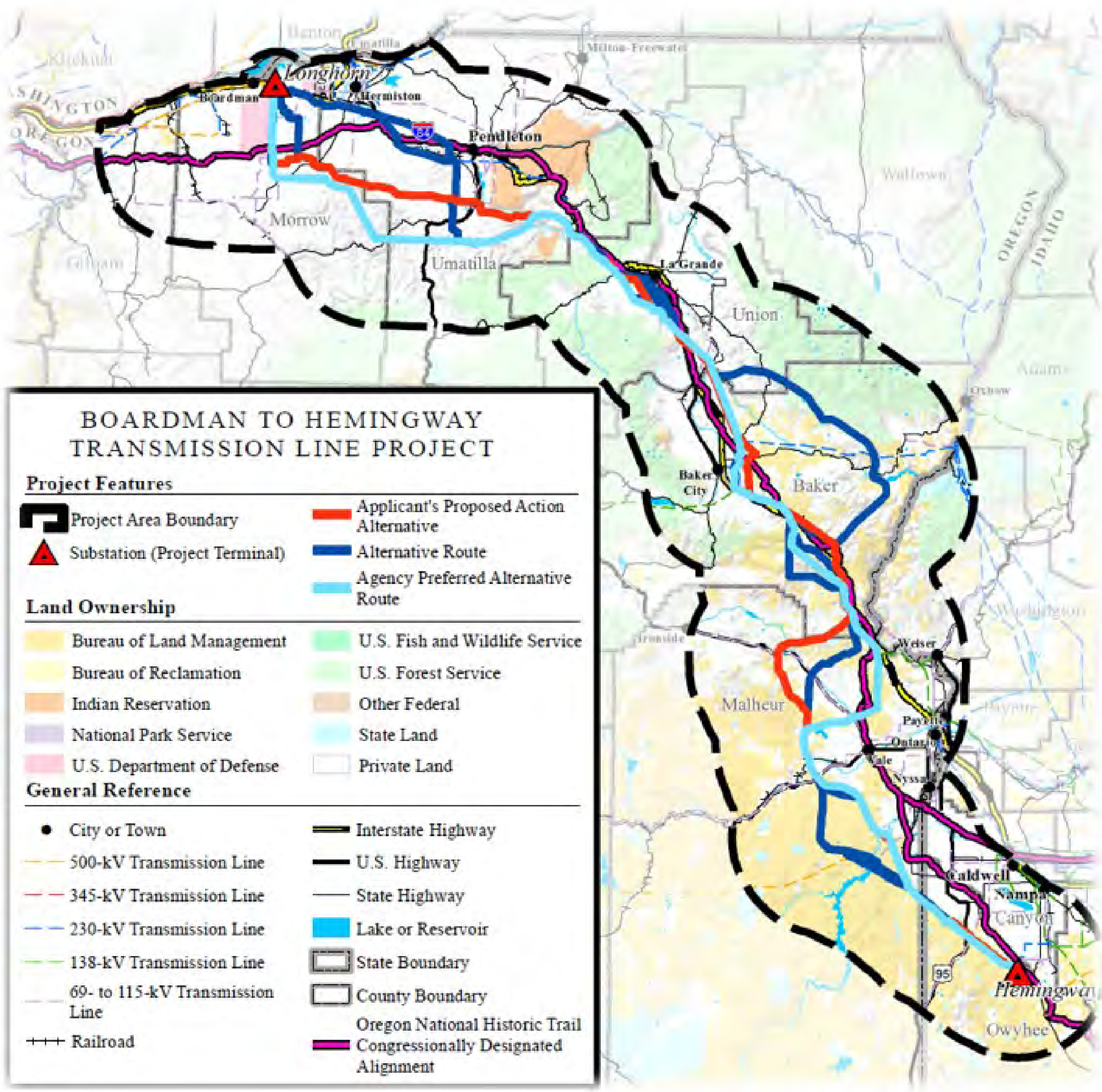


Figure D-3. BLM final EIS routes

The conclusion of the BLM-led NEPA process, the BLM's ROD, resulted in a singular route—the BLM's Agency Preferred route. The 293.4-mile approved route will run across 100.3 miles of federal land (managed by the BLM, the USFS, the Bureau of Reclamation, and the United States Department of Defense), 190.2 miles of private land, and 2.9 miles of state lands. Figure D-4 shows the BLM's Agency Preferred route.

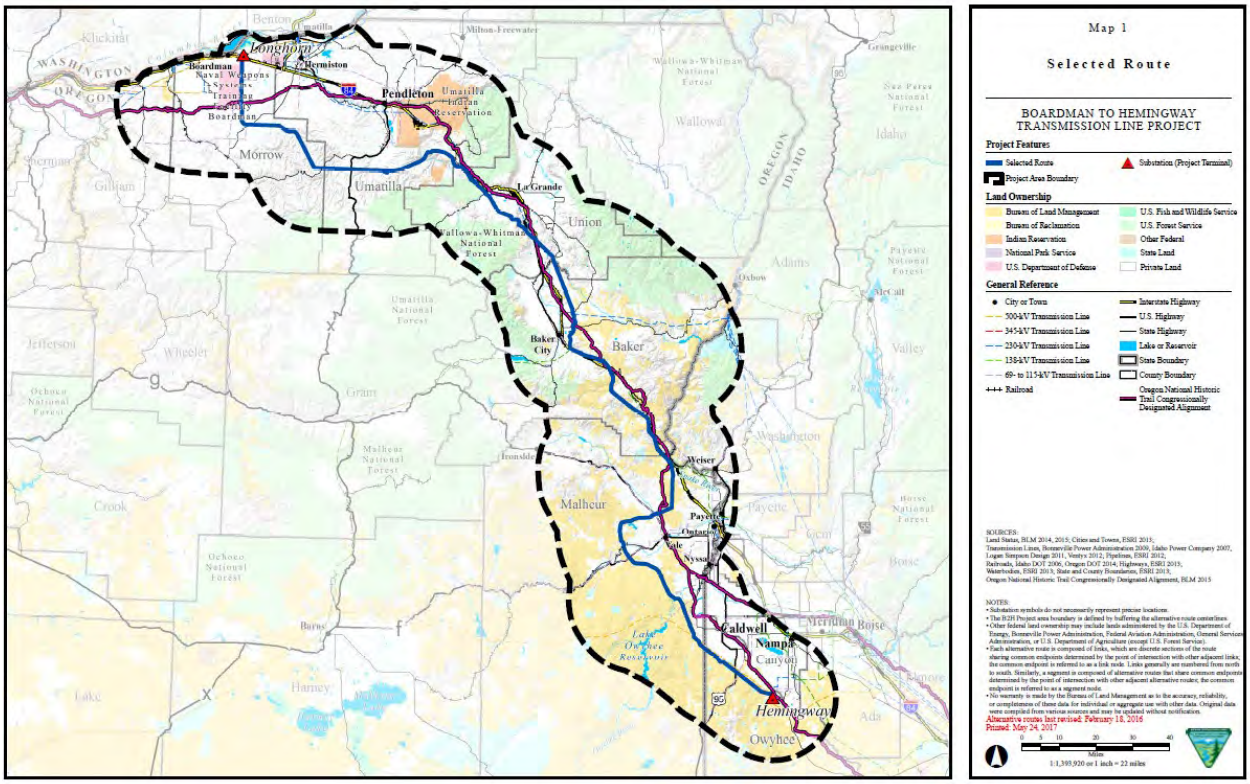


Figure D-4. BLM Agency Preferred route from the 2017 BLM ROD

As discussed previously, the BLM-led NEPA process and the EFSC process are separate and distinct processes. Idaho Power submitted its Amended Application for Site Certificate to the ODOE in summer 2017. The route Idaho Power submitted to the ODOE as part of the Application for Site Certificate is very similar to the BLM's Agency Preferred route, except for a small sections across private property in the La Grande area. The BLM's Agency Preferred route in this area was a surprise to Idaho Power and seemingly all stakeholders and landowners in the area.

At the time of EFSC application finalization (which was prior to the Final EIS release), Idaho Power did not feel as if there was a stakeholder consensus preference between the county's preferred route and the modified route west of the City of La Grande. Therefore, Idaho Power brought both alternatives into the EFSC application. Since that time, Idaho Power understands that the Morgan Lake route alternative, on balance, appears to be preferred by the majority of the groups previously identified.

Figure D-5 shows the route Idaho Power submitted in its 2017 EFSC Application for Site Certificate.

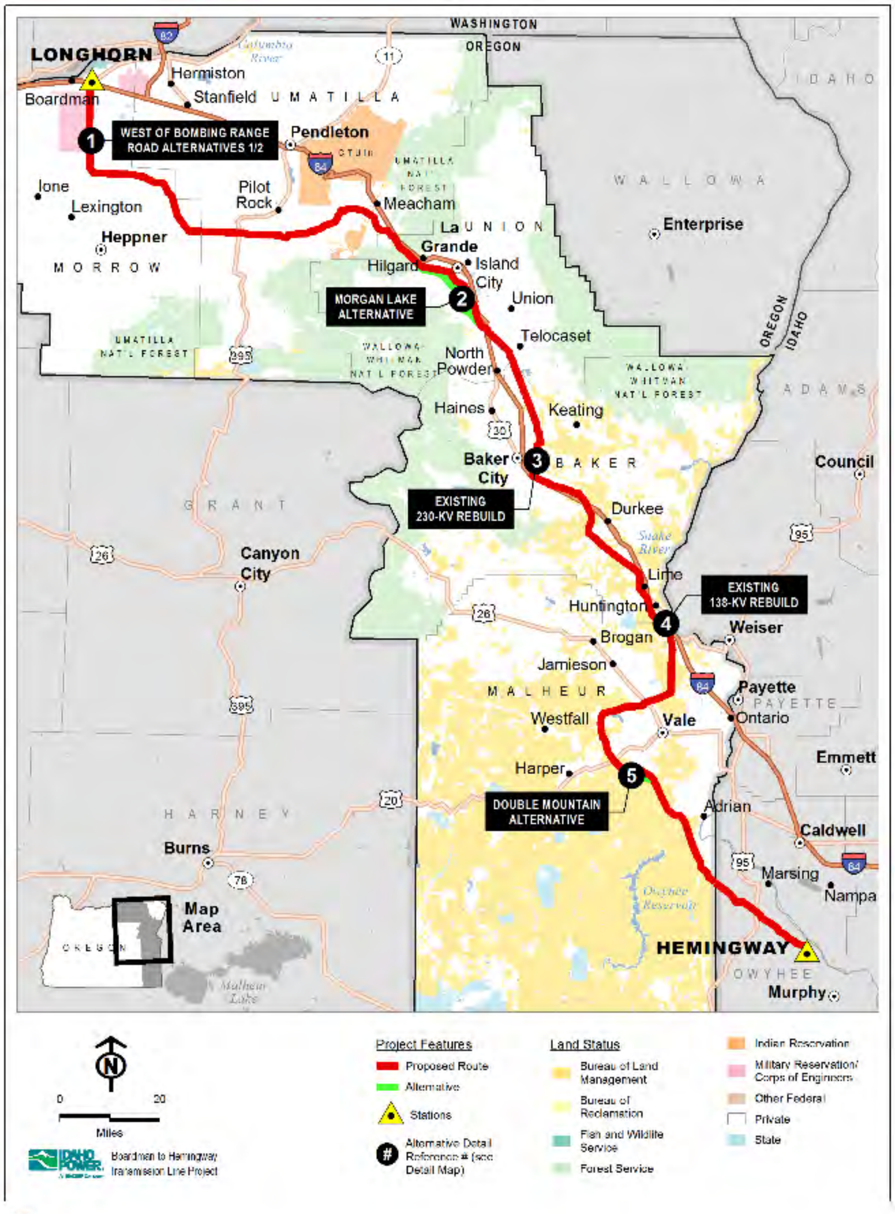


Figure D-5. B2H route submitted in 2017 EFSC Application for Site Certificate

BEFORE THE

OREGON PUBLIC UTILITIES COMMISSION

DOCKET NO. LC 78

IDAHO POWER COMPANY

ATTACHMENT
REPLACEMENT PAGES
LEGISLATIVE FORMAT

- Unit 2—Allowed to exit between year-end 2023 and year-end 2026 or convert to natural gas as early as year-end 2023. If converted to natural gas, the unit will operate through 2034.
- Unit 3—Can exit no earlier than year-end 2025 and no later than year-end 2034.
- Unit 4—Can exit no earlier than year-end 2027 and no later than year-end 2034.

The results of the LTCE model indicate that the conversion of units 1 and 2 to natural gas in 2023 is economical. The Preferred Portfolio identifies exits for units 3 and 4 year-end 2025 and 2028, respectively. To ensure the robustness of these modeling outcomes, the company performed a significant number of validation and verification studies around the Bridger conversions and coal exit dates. These validation and verification studies are detailed in Chapter 9.

Boardman to Hemingway

Idaho Power in the 2021 IRP requests acknowledgement of B2H based on the company owning 45% of the project. This ownership share, which represents a change from Idaho Power's 21% share in the 2019 IRP, is the result of negotiations among Idaho Power, PacifiCorp, and Bonneville Power Administration (BPA). Under such a structure, Idaho Power would absorb BPA's previously assumed ownership share in exchange for BPA entering into a transmission service agreement with Idaho Power. This arrangement, along with many other aspects of B2H, will be detailed in *Appendix D*, which will be filed during the first quarter of 2022.

The Preferred Portfolio, which includes B2H, is significantly more cost-effective than the best alternative portfolio that did not include B2H.

- Base with B2H Portfolio NPV (Preferred Portfolio)—$~~7,915.7~~7,942.4 million
- Base without B2H PAC Bridger Alignment Portfolio NPV—$~~8,185.3~~ 8,207.9million
- B2H NPV Cost Effectiveness Differential—$~~269.6~~265.5 million

Under planning conditions, the Base with B2H (Preferred Portfolio) is approximately $~~270~~ 266 million more cost effective than the best portfolio that did not include the B2H project. Detailed portfolio costs can be found in Chapter 10.

This arrangement, along with many other aspects of B2H, will be detailed in the *Appendix D–Transmission Supplement*, which will be filed during the first quarter of 2022.

B2H's value to Idaho Power's customers is substantial, and it is a key least-cost resource.

The Preferred Portfolio, which includes B2H, is significantly more cost-effective than the best alternative resource portfolio that did not include B2H.

- Base with B2H Portfolio NPV (Preferred Portfolio)—$~~7,915.7~~7,942.4 million
- Base without B2H PAC Bridger Alignment Portfolio NPV—$~~8,185.3~~8,207.9 million
- B2H NPV Cost Effectiveness Differential—$~~269.6~~265.5 million

Under planning conditions, the Preferred Portfolio (Base with B2H) is approximately $~~270~~ 266 million more cost effective than the best portfolio that did not include the B2H project. Detailed portfolio costs can be found in Chapter 10.

Finally, B2H is an important step in moving Idaho Power toward its 2045 clean energy goal. The B2H 500-kV line adds significant regional capacity with some remaining unallocated east-to-west capacity. Additional parties may reduce costs and further optimize the project for all participants.

Project Participants

In January 2012, Idaho Power entered into a joint funding agreement with PacifiCorp and BPA to pursue permitting of the project. The agreement designates Idaho Power as the permitting project manager for the B2H project. Table 7.2 shows each party's B2H capacity and permitting cost allocation.

Table 7.2 B2H capacity and permitting cost allocation

	Idaho Power	BPA	PacifiCorp
Capacity (MW) west to east	350: 200 winter/500 summer	400: 550 winter/250 summer	300
Capacity (MW) east to west	85	97	818
Permitting cost allocation	21%	24%	55%

For the 2021 IRP, Idaho Power modeled B2H assuming that BPA transitions from an ownership stake in the B2H project to a service-based stake in the project. Further details regarding this assumption will be provided in *Appendix D*, which is anticipated to be filed during the first quarter of 2022. Table 7.3 shows what each party's new B2H capacity allocation would be, given this assumption.

Each of the portfolios designed under the AURORA LTCE process, that are in contention for the Preferred Portfolio, were evaluated through three different hourly simulations shown in Table 10.2.

Table 10.2 AURORA hourly simulations

	Zero Carbon	Planning Carbon	High Carbon
Planning Gas	X	X	
High Gas			X

The three combinations include the planning case scenarios as well as the bookends for natural gas and carbon adder price forecasts.

The purpose of the AURORA hourly simulations is to compare how portfolios perform throughout the 20-year timeframe of the IRP. These simulations include the costs associated with adding generation resources (both supply-side and demand-side) and optimally dispatching the resources to meet the constraints within the model. The results from the three hourly simulations, where only the pricing forecasts were changed, are shown in Table 10.3. These different portfolios and their associated costs can be compared as potential options for a preferred portfolio.

Table 10.3 2021 IRP portfolios, NPV years 2021–2040 ($ x 1,000)

Portfolio	Planning Gas, Planning Carbon	Planning Gas, Zero Carbon	High Gas, High Carbon
Base with B2H	$~~7,915,702~~7,942,428	$~~7,186,761~~7,213,486	$~~9,832,001~~9,858,726
Base B2H PAC Bridger Alignment	$~~7,999,347~~8,021,906	$~~7,152,955~~7,175,514	$~~9,932,925~~9,955,484
Base without B2H	$~~8,192,830~~8,219,281	$~~7,784,545~~7,810,996	$~~9,474,983~~9,501,435
Base without B2H without Gateway West[35]	$~~8,441,414~~8,470,101	-	-
Base without B2H PAC Bridger Alignment	$~~8,185,334~~8,207,893	$~~7,588,228~~7,610,787	$~~9,652,891~~9,675,450
Base with B2H—High Gas High Carbon Test[36]	$~~7,997,339~~8,024,064	-	$~~9,424,935~~9,451,660

[35] The company did not continue further evaluation of this portfolio beyond planning conditions due to the portfolio's inferior performance (high-cost, poor reliability, and poor emissions performance).

[36] All portfolios were optimized with planning conditions. The "Base with B2H—High Gas High Carbon (HGHC) Test" portfolio includes total renewables equivalent to the "Base without B2H" portfolio and was evaluated to test B2H as an independent variable. The results indicate that B2H remains cost effective, independent of gas price and carbon price and that a pivot to even more renewables in a future with a high gas and carbon price would be appropriate.

This comparison, as well as the stochastic risk analysis applied to these portfolios (see the Stochastic Risk Analysis section of this chapter), indicate the Base with B2H portfolio best minimizes both cost and risk and is the appropriate choice for the Preferred Portfolio.

The scenarios listed in Table 10.4 were sensitivities tested on the Preferred Portfolio and are included to show the associated costs. Each was evaluated under planning natural gas and carbon adder forecasts.

Table 10.4 2021 IRP Sensitivities, NPV years 2021–2040 ($ x 1,000)

Sensitivity	Cost
Preferred Portfolio (Base with B2H)	$~~7,915,702~~7,942,428
SWIP-North	$~~7,887,562~~7,914,287
CSPP Wind Renewal Low	$~~7,892,585~~7,919,311
CSPP Wind Renewal High	$~~7,926,005~~7,952,730

The validation and verification tests are listed in Table 10.5. These were modeling simulations performed on the Preferred Portfolio, with changes to the resources identified in the Action Plan window, to ensure the model was optimizing correctly and to test assumptions. More details on the setup and expected outcome of each test are provided in Chapter 9.

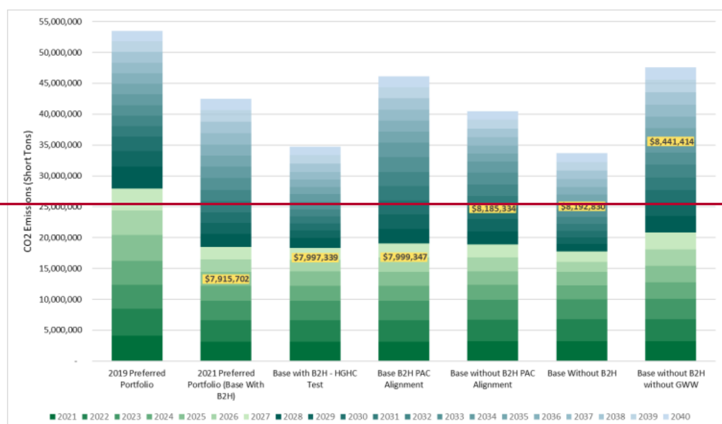
Table 10.5 2021 IRP validation and verification tests, NPV years 2021–2040 ($ x 1,000)

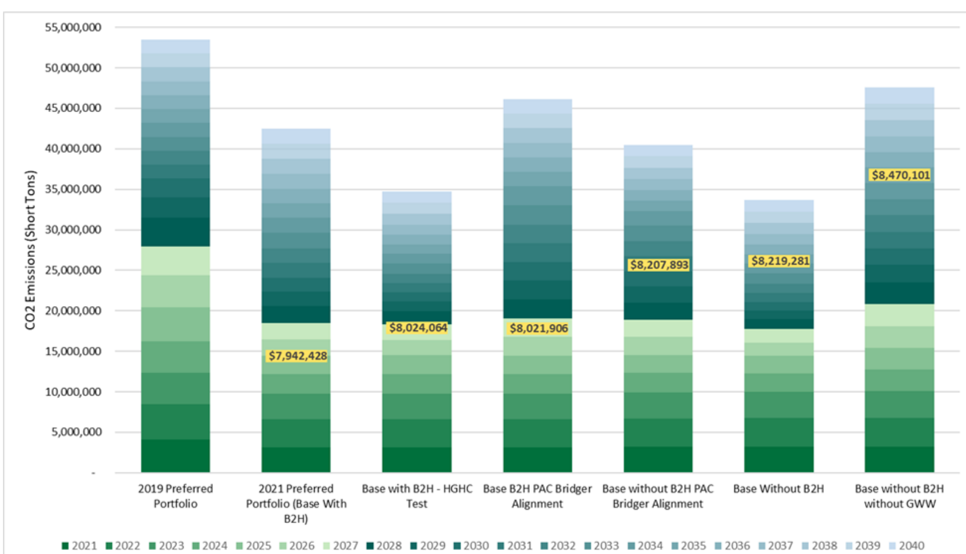
Validation & Verification Tests	Cost
Preferred Portfolio (Base with B2H)	$~~7,915,702~~7,942,428
Demand Response	$~~7,917,643~~7,944,368
Energy Efficiency	$~~8,143,113~~8,169,838
Natural Gas in 2028 Rather than Solar and Storage	$~~8,052,194~~8,078,645
Bridger Exit Units 1 & 2 at the End of 2023	$~~8,073,162~~8,077,805
Bridger Exit Unit 2 at the End of 2026	$~~7,997,648~~8,014,305
Bridger Unit 2 Delayed Gas Conversion (2027)	$~~7,938,805~~7,962,665
Bridger Exit Unit 4 in 2027	$~~7,925,427~~7,951,878
Bridger Exit Units 3 and 4 in 2028 and 2030	$~~7,969,378~~7,997,453
Geothermal	$~~7,973,781~~8,000,506
Biomass	$~~7,968,264~~7,994,989
Valmy Unit 2 Exit in 2023	$~~7,930,664~~7,957,116
Valmy Unit 2 Exit in 2024	$~~7,929,939~~7,956,390

Portfolio Emission Results

The company is seeking to execute on the actions identified in the Action Plan window. Therefore, the company evaluated the CO_2 emissions within the Action Plan window for each portfolio in contention for the Preferred Portfolio, along with the SWIP-North portfolio.

Figure 10.2 compares the full 20-year emissions of the company's 2019 Preferred Portfolio to the top contending portfolios in the 2021 IRP. In Figure 10.2, the 2019 Preferred Portfolio is on the far left, adjacent to the 2021 Preferred Portfolio on its immediate right. Compared to the 2019 Preferred Portfolio, the 2021 Preferred Portfolio has cumulative emissions reductions of about 21%. As can be seen on Figure 10.2, the other 2021 portfolios each reflect reduced emissions as compared to the 2019 Preferred Portfolio and are sorted by present value portfolio cost from left to right. The costs associated with each portfolio are shown in the yellow highlights. While 2021 IRP portfolios are shown on Figure 10.1 to have relatively similar emissions output during the Action Plan window, three portfolios have lower projected emissions than the 2021 Preferred Portfolio over the full 20-year planning horizon. However, it is important to note that each of those three portfolios present higher expected cost. The information presented on Figures 10.1 and 10.2 demonstrate that Idaho Power's CO_2 emissions can be expected to trend downward over time. Idaho Power will continue to evaluate resource needs and alternatives that balance cost and risk, including the relative potential CO_2 emissions.





SWIP-North Opportunity Evaluation

The SWIP-North opportunity evaluation tests whether Idaho Power customers would potentially benefit from Idaho Power's involvement in the project. Based on the NPV cost results detailed in Table 10.4, the SWIP-North project appears to be worth further exploration.

- Preferred Portfolio (Base with B2H) NPV—$~~7,915,702~~7,942,428
- SWIP-North Portfolio NPV—$~~7,887,562~~7,914,287

In this opportunity evaluation, the company made assumptions about SWIP-North, and its cost and capacity benefits, which are detailed more in Chapter 7. The company is not familiar with any current partnership arrangements associated with the project, whether there are opportunities to participate in the project, or the feasibility of the project in general and its associated in-service date. Given the possible benefits to Idaho Power customers, the company will engage the SWIP-North project developer and look to perform a more detailed evaluation of SWIP-North in future IRPs.

B2H Robustness Testing

The company evaluated B2H assuming five different planning margin contributions, four different costs (various contingency amounts), and two different in-service dates to consider the robustness of the B2H project.

B2H Capacity Evaluation

When the B2H project is placed into service, currently scheduled for pre-summer 2026, the company will have access to as much as 550 MW of summer capacity. In recent IRPs, the company has planned to utilize 500 MW of B2H capacity to access the Mid-C markets and purchase power.

As part of the 2021 IRP, the company looked at portfolio costs assuming the company can access 350 MW, 400 MW, 450 MW, 500 MW (the Preferred Portfolio), and 550 MW of capacity. The sensitivities with capacity amounts less than 500 MW are set up to evaluate risk related to reduced market access. The 550 MW capacity amount sensitivity quantifies potential benefits associated with leveraging additional market purchases to avoid the need for a new resource. To evaluate the impact of different B2H capacity levels, the company added or subtracted comparable capacity in the form of battery storage (the least-cost alternative to providing sufficient amounts of capacity) to maintain an adequate planning margin, while maintaining the same cost of B2H (i.e., B2H capacity's contribution toward the planning margin is reduced with no offsetting cost reduction). The resulting total portfolio costs are detailed in Table 10.8.

Table 10.8 B2H capacity sensitivities

	Portfolio NPV	Potential Offsetting Costs Not Included (NPV)
Base B2H Portfolio—350 MW Planning Contribution	$~~8,042~~8,069 million	$51 million
Base B2H Portfolio—400 MW Planning Contribution	$~~7,992~~8,019 million	$34 million
Base B2H Portfolio—450 MW Planning Contribution	$~~7,953~~7,979 million	$17 million
Base B2H Portfolio (500 MW)	$~~7,916~~7,942 million	$0
Base B2H Portfolio—550 MW Planning Contribution	$~~7,884~~7,911 million	$0
Base without B2H PAC Bridger Alignment Portfolio (for comparison)	$~~8,185~~8,208 million	N/A

Table 10.8 shows that even with a substantially reduced planning margin contribution, B2H portfolios remain cost effective. Additionally, if the company is able to access an additional 50 MW from the Mid-C market, that may present a cost-saving opportunity for customers.

The "Potential Offsetting Costs Not Included" column represents the possibility of selling wheeling service utilizing the B2H capacity that is not being utilized by the company in the given scenario. This offsetting cost is not factored into the portfolio NPV.

B2H Cost Risk Evaluation

A transmission line such as B2H requires significant planning, organization, labor, and material over a multi-year process to complete and place in-service. Evaluating cost risks to ensure cost-effectiveness (i.e., a tipping point analysis) is an important consideration when planning for such a project. Table 10.9 details the cost of the B2H project with 0%, 10%, 20%, and 30% cost contingencies.

Table 10.9 B2H cost sensitivities

	B2H Cost Idaho Power Share TOTAL	B2H Cost 2021 IRP NPV
B2H 0% Contingency	$485 million	$159.6 million
B2H 10% Contingency	$526 million	$178.4 million
B2H 20% Contingency	$566 million	$197.2 million
B2H 30% Contingency	$607 million	$216.1 million

Utilizing the numbers in Table 10.8 and comparing them to the difference between the Preferred Portfolio (Base with B2H) and the Base without B2H PAC Bridger Alignment portfolio, the B2H project would have to increase significantly beyond a 30% contingency before the project would no longer be cost-effective. While this is already a significant margin, it should be noted that there are other unquantified benefits to the B2H project that if quantified, would further widen this gap. These items will be discussed in more detail in the forthcoming *Appendix D–Transmission Supplement*, which is anticipated to be filed in the first quarter of 2022.

B2H In-Service Date Risk Evaluation

The current planned in-service date for B2H is prior to the summer of 2026. This date is necessary to meet the peak demand growth needs, as well as fill in for the Valmy Unit 2 exit occurring at the end of 2025, and to facilitate the exit of Bridger Unit 3, as recommended as part of the Preferred Portfolio.

Should the B2H in-service date slip to 2027 due to a delay in receiving a permit, supply chain constraints, or other unforeseen issues, the exit of Bridger Unit 3 will certainly be delayed, and other new resources will be required in 2026. Table 10.10 details the cost change of B2H adjusting to 2027, and the new comparison to the Base without B2H PAC Bridger Alignment portfolio (the best B2H-excluded portfolio).

Table 10.10 B2H 2027 portfolio costs, cost sensitivities ($ x 1,000)

	Portfolio Costs	Portfolio Cost Compared to B2H 2027 Portfolio
Preferred Portfolio (Base with B2H)	$~~7,915,702~~7,942,428	-$~~69,062~~69,090
Base with B2H in 2027	$~~7,984,764~~8,011,517	-
Base without B2H PAC Alignment	$~~8,185,334~~8,207,893	$~~200,570~~196,375

Slippage in the schedule from 2026 to 2027 would not be ideal for Idaho Power customers. However, B2H remains the most cost-effective long-term resource.

Regional Resource Adequacy

Northwest Seasonal Resource Availability Forecast

Idaho Power experiences its peak demand in late June or early July while the regional adequacy assessments suggest potential capacity deficits in late summer or winter. In the case of late summer, Idaho Power's demand has generally declined substantially; Idaho Power's irrigation customer demand begins to decrease starting in mid-July. For winter adequacy, Idaho Power generally has excess resource capacity to support the region.

The assessment of regional resource adequacy is useful in understanding the liquidity of regional wholesale electric markets. For the 2021 IRP, Idaho Power reviewed the *Pacific Northwest Loads and Resources Study* by the BPA (White Book). For illustrative purposes, Idaho Power also downloaded FERC 714 load data for the major Washington and Oregon Pacific Northwest entities to show the difference in regional demand between summer and winter.

BEFORE THE

OREGON PUBLIC UTILITIES COMMISSION

DOCKET NO. LC 78

IDAHO POWER COMPANY

ATTACHMENT
REPLACEMENT PAGES
CLEAN FORMAT

- Unit 2—Allowed to exit between year-end 2023 and year-end 2026 or convert to natural gas as early as year-end 2023. If converted to natural gas, the unit will operate through 2034.
- Unit 3—Can exit no earlier than year-end 2025 and no later than year-end 2034.
- Unit 4—Can exit no earlier than year-end 2027 and no later than year-end 2034.

The results of the LTCE model indicate that the conversion of units 1 and 2 to natural gas in 2023 is economical. The Preferred Portfolio identifies exits for units 3 and 4 year-end 2025 and 2028, respectively. To ensure the robustness of these modeling outcomes, the company performed a significant number of validation and verification studies around the Bridger conversions and coal exit dates. These validation and verification studies are detailed in Chapter 9.

Boardman to Hemingway

Idaho Power in the 2021 IRP requests acknowledgement of B2H based on the company owning 45% of the project. This ownership share, which represents a change from Idaho Power's 21% share in the 2019 IRP, is the result of negotiations among Idaho Power, PacifiCorp, and Bonneville Power Administration (BPA). Under such a structure, Idaho Power would absorb BPA's previously assumed ownership share in exchange for BPA entering into a transmission service agreement with Idaho Power. This arrangement, along with many other aspects of B2H, will be detailed in *Appendix D*, which will be filed during the first quarter of 2022.

The Preferred Portfolio, which includes B2H, is significantly more cost-effective than the best alternative portfolio that did not include B2H.

- Base with B2H Portfolio NPV (Preferred Portfolio)—$7,942.4 million
- Base without B2H PAC Bridger Alignment Portfolio NPV—$8,207.9million
- B2H NPV Cost Effectiveness Differential—$265.5 million

Under planning conditions, the Base with B2H (Preferred Portfolio) is approximately $266 million more cost effective than the best portfolio that did not include the B2H project. Detailed portfolio costs can be found in Chapter 10.

This arrangement, along with many other aspects of B2H, will be detailed in the *Appendix D–Transmission Supplement*, which will be filed during the first quarter of 2022.

B2H's value to Idaho Power's customers is substantial, and it is a key least-cost resource.

The Preferred Portfolio, which includes B2H, is significantly more cost-effective than the best alternative resource portfolio that did not include B2H.

- Base with B2H Portfolio NPV (Preferred Portfolio)—$7,942.4 million
- Base without B2H PAC Bridger Alignment Portfolio NPV—$8,207.9 million
- B2H NPV Cost Effectiveness Differential—$265.5 million

Under planning conditions, the Preferred Portfolio (Base with B2H) is approximately $266 million more cost effective than the best portfolio that did not include the B2H project. Detailed portfolio costs can be found in Chapter 10.

Finally, B2H is an important step in moving Idaho Power toward its 2045 clean energy goal. The B2H 500-kV line adds significant regional capacity with some remaining unallocated east-to-west capacity. Additional parties may reduce costs and further optimize the project for all participants.

Project Participants

In January 2012, Idaho Power entered into a joint funding agreement with PacifiCorp and BPA to pursue permitting of the project. The agreement designates Idaho Power as the permitting project manager for the B2H project. Table 7.2 shows each party's B2H capacity and permitting cost allocation.

Table 7.2 B2H capacity and permitting cost allocation

	Idaho Power	BPA	PacifiCorp
Capacity (MW) west to east	350: 200 winter/500 summer	400: 550 winter/250 summer	300
Capacity (MW) east to west	85	97	818
Permitting cost allocation	21%	24%	55%

For the 2021 IRP, Idaho Power modeled B2H assuming that BPA transitions from an ownership stake in the B2H project to a service-based stake in the project. Further details regarding this assumption will be provided in *Appendix D*, which is anticipated to be filed during the first quarter of 2022. Table 7.3 shows what each party's new B2H capacity allocation would be, given this assumption.

Each of the portfolios designed under the AURORA LTCE process, that are in contention for the Preferred Portfolio, were evaluated through three different hourly simulations shown in Table 10.2.

Table 10.2 AURORA hourly simulations

	Zero Carbon	Planning Carbon	High Carbon
Planning Gas	X	X	
High Gas			X

The three combinations include the planning case scenarios as well as the bookends for natural gas and carbon adder price forecasts.

The purpose of the AURORA hourly simulations is to compare how portfolios perform throughout the 20-year timeframe of the IRP. These simulations include the costs associated with adding generation resources (both supply-side and demand-side) and optimally dispatching the resources to meet the constraints within the model. The results from the three hourly simulations, where only the pricing forecasts were changed, are shown in Table 10.3. These different portfolios and their associated costs can be compared as potential options for a preferred portfolio.

Table 10.3 2021 IRP portfolios, NPV years 2021–2040 ($ x 1,000)

Portfolio	Planning Gas, Planning Carbon	Planning Gas, Zero Carbon	High Gas, High Carbon
Base with B2H	$7,942,428	$7,213,486	$9,858,726
Base B2H PAC Bridger Alignment	$8,021,906	$7,175,514	$9,955,484
Base without B2H	$8,219,281	$7,810,996	$9,501,435
Base without B2H without Gateway West[35]	$8,470,101	-	-
Base without B2H PAC Bridger Alignment	$8,207,893	$7,610,787	$9,675,450
Base with B2H—High Gas High Carbon Test[36]	$8,024,064	-	$9,451,660

[35] The company did not continue further evaluation of this portfolio beyond planning conditions due to the portfolio's inferior performance (high-cost, poor reliability, and poor emissions performance).

[36] All portfolios were optimized with planning conditions. The "Base with B2H—High Gas High Carbon (HGHC) Test" portfolio includes total renewables equivalent to the "Base without B2H" portfolio and was evaluated to test B2H as an independent variable. The results indicate that B2H remains cost effective, independent of gas price and carbon price and that a pivot to even more renewables in a future with a high gas and carbon price would be appropriate.

This comparison, as well as the stochastic risk analysis applied to these portfolios (see the Stochastic Risk Analysis section of this chapter), indicate the Base with B2H portfolio best minimizes both cost and risk and is the appropriate choice for the Preferred Portfolio.

The scenarios listed in Table 10.4 were sensitivities tested on the Preferred Portfolio and are included to show the associated costs. Each was evaluated under planning natural gas and carbon adder forecasts.

Table 10.4 2021 IRP Sensitivities, NPV years 2021–2040 ($ x 1,000)

Sensitivity	Cost
Preferred Portfolio (Base with B2H)	$7,942,428
SWIP-North	$7,914,287
CSPP Wind Renewal Low	$7,919,311
CSPP Wind Renewal High	$7,952,730

The validation and verification tests are listed in Table 10.5. These were modeling simulations performed on the Preferred Portfolio, with changes to the resources identified in the Action Plan window, to ensure the model was optimizing correctly and to test assumptions. More details on the setup and expected outcome of each test are provided in Chapter 9.

Table 10.5 2021 IRP validation and verification tests, NPV years 2021–2040 ($ x 1,000)

Validation & Verification Tests	Cost
Preferred Portfolio (Base with B2H)	$7,942,428
Demand Response	$7,944,368
Energy Efficiency	$8,169,838
Natural Gas in 2028 Rather than Solar and Storage	$8,078,645
Bridger Exit Units 1 & 2 at the End of 2023	$8,077,805
Bridger Exit Unit 2 at the End of 2026	$8,014,305
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Bridger Exit Unit 4 in 2027	$7,951,878
Bridger Exit Units 3 and 4 in 2028 and 2030	$7,997,453
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Valmy Unit 2 Exit in 2023	$7,957,116
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Portfolio Emission Results

The company is seeking to execute on the actions identified in the Action Plan window. Therefore, the company evaluated the CO_2 emissions within the Action Plan window for each portfolio in contention for the Preferred Portfolio, along with the SWIP-North portfolio.

Figure 10.2 compares the full 20-year emissions of the company's 2019 Preferred Portfolio to the top contending portfolios in the 2021 IRP. In Figure 10.2, the 2019 Preferred Portfolio is on the far left, adjacent to the 2021 Preferred Portfolio on its immediate right. Compared to the 2019 Preferred Portfolio, the 2021 Preferred Portfolio has cumulative emissions reductions of about 21%. As can be seen on Figure 10.2, the other 2021 portfolios each reflect reduced emissions as compared to the 2019 Preferred Portfolio and are sorted by present value portfolio cost from left to right. The costs associated with each portfolio are shown in the yellow highlights. While 2021 IRP portfolios are shown on Figure 10.1 to have relatively similar emissions output during the Action Plan window, three portfolios have lower projected emissions than the 2021 Preferred Portfolio over the full 20-year planning horizon. However, it is important to note that each of those three portfolios present higher expected cost. The information presented on Figures 10.1 and 10.2 demonstrate that Idaho Power's CO_2 emissions can be expected to trend downward over time. Idaho Power will continue to evaluate resource needs and alternatives that balance cost and risk, including the relative potential CO_2 emissions.

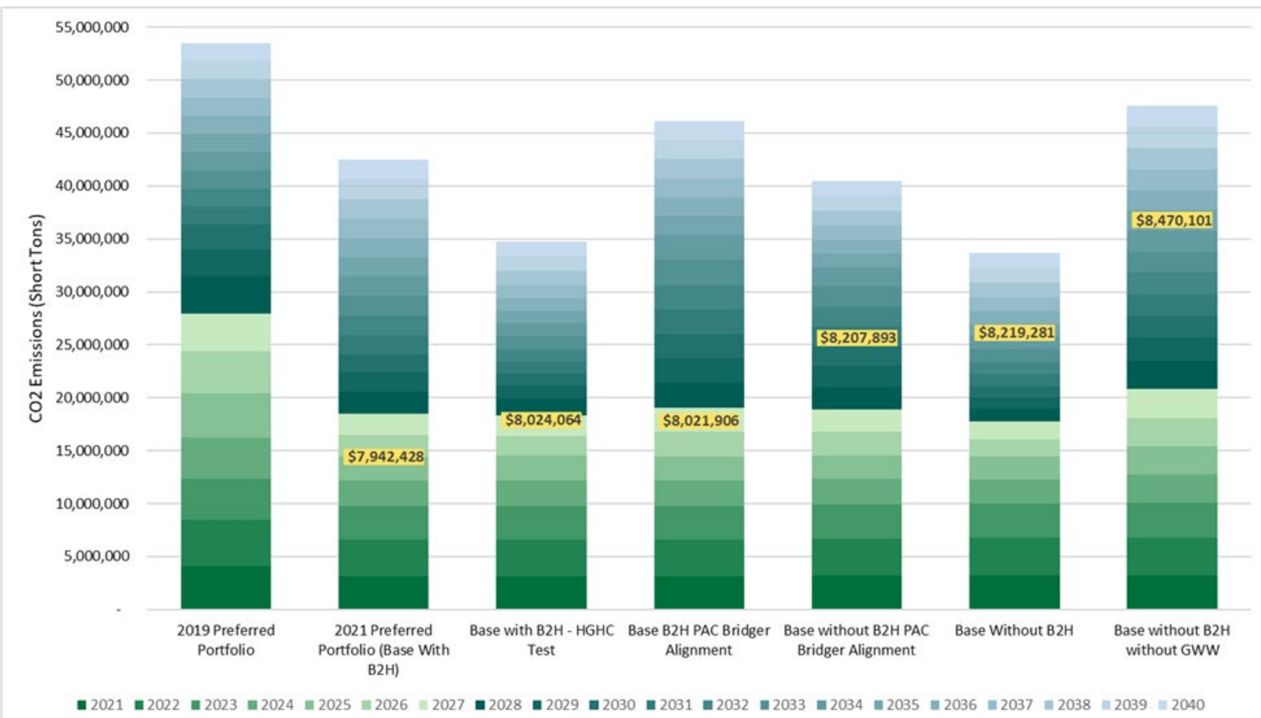


Figure 10.2 Estimated portfolio emissions from 2021–2040

In conclusion, the Preferred Portfolio (Base with B2H) strikes an appropriate balance of cost, risk, and emissions reductions over the Action Plan window. The Preferred Portfolio also lays a cost-effective foundation to build upon for further emissions reductions into the future.

SWIP-North Opportunity Evaluation

The SWIP-North opportunity evaluation tests whether Idaho Power customers would potentially benefit from Idaho Power's involvement in the project. Based on the NPV cost results detailed in Table 10.4, the SWIP-North project appears to be worth further exploration.

- Preferred Portfolio (Base with B2H) NPV—$7,942,428
- SWIP-North Portfolio NPV—$7,914,287

In this opportunity evaluation, the company made assumptions about SWIP-North, and its cost and capacity benefits, which are detailed more in Chapter 7. The company is not familiar with any current partnership arrangements associated with the project, whether there are opportunities to participate in the project, or the feasibility of the project in general and its associated in-service date. Given the possible benefits to Idaho Power customers, the company will engage the SWIP-North project developer and look to perform a more detailed evaluation of SWIP-North in future IRPs.

B2H Robustness Testing

The company evaluated B2H assuming five different planning margin contributions, four different costs (various contingency amounts), and two different in-service dates to consider the robustness of the B2H project.

B2H Capacity Evaluation

When the B2H project is placed into service, currently scheduled for pre-summer 2026, the company will have access to as much as 550 MW of summer capacity. In recent IRPs, the company has planned to utilize 500 MW of B2H capacity to access the Mid-C markets and purchase power.

As part of the 2021 IRP, the company looked at portfolio costs assuming the company can access 350 MW, 400 MW, 450 MW, 500 MW (the Preferred Portfolio), and 550 MW of capacity. The sensitivities with capacity amounts less than 500 MW are set up to evaluate risk related to reduced market access. The 550 MW capacity amount sensitivity quantifies potential benefits associated with leveraging additional market purchases to avoid the need for a new resource. To evaluate the impact of different B2H capacity levels, the company added or subtracted comparable capacity in the form of battery storage (the least-cost alternative to providing sufficient amounts of capacity) to maintain an adequate planning margin, while maintaining the same cost of B2H (i.e., B2H capacity's contribution toward the planning margin is reduced with no offsetting cost reduction). The resulting total portfolio costs are detailed in Table 10.8.

Table 10.8 B2H capacity sensitivities

	Portfolio NPV	Potential Offsetting Costs Not Included (NPV)
Base B2H Portfolio—350 MW Planning Contribution	$8,069 million	$51 million
Base B2H Portfolio—400 MW Planning Contribution	$8,019 million	$34 million
Base B2H Portfolio—450 MW Planning Contribution	$7,979 million	$17 million
Base B2H Portfolio (500 MW)	$7,942 million	$0
Base B2H Portfolio—550 MW Planning Contribution	$7,911 million	$0
Base without B2H PAC Bridger Alignment Portfolio (for comparison)	$8,208 million	N/A

Table 10.8 shows that even with a substantially reduced planning margin contribution, B2H portfolios remain cost effective. Additionally, if the company is able to access an additional 50 MW from the Mid-C market, that may present a cost-saving opportunity for customers.

The "Potential Offsetting Costs Not Included" column represents the possibility of selling wheeling service utilizing the B2H capacity that is not being utilized by the company in the given scenario. This offsetting cost is not factored into the portfolio NPV.

B2H Cost Risk Evaluation

A transmission line such as B2H requires significant planning, organization, labor, and material over a multi-year process to complete and place in-service. Evaluating cost risks to ensure cost-effectiveness (i.e., a tipping point analysis) is an important consideration when planning for such a project. Table 10.9 details the cost of the B2H project with 0%, 10%, 20%, and 30% cost contingencies.

Table 10.9 B2H cost sensitivities

	B2H Cost Idaho Power Share TOTAL	B2H Cost 2021 IRP NPV
B2H 0% Contingency	$485 million	$159.6 million
B2H 10% Contingency	$526 million	$178.4 million
B2H 20% Contingency	$566 million	$197.2 million
B2H 30% Contingency	$607 million	$216.1 million

Utilizing the numbers in Table 10.8 and comparing them to the difference between the Preferred Portfolio (Base with B2H) and the Base without B2H PAC Bridger Alignment portfolio, the B2H project would have to increase significantly beyond a 30% contingency before the project would no longer be cost-effective. While this is already a significant margin, it should be noted that there are other unquantified benefits to the B2H project that if quantified, would further widen this gap. These items will be discussed in more detail in the forthcoming

Appendix D–Transmission Supplement, which is anticipated to be filed in the first quarter of 2022.

B2H In-Service Date Risk Evaluation

The current planned in-service date for B2H is prior to the summer of 2026. This date is necessary to meet the peak demand growth needs, as well as fill in for the Valmy Unit 2 exit occurring at the end of 2025, and to facilitate the exit of Bridger Unit 3, as recommended as part of the Preferred Portfolio.

Should the B2H in-service date slip to 2027 due to a delay in receiving a permit, supply chain constraints, or other unforeseen issues, the exit of Bridger Unit 3 will certainly be delayed, and other new resources will be required in 2026. Table 10.10 details the cost change of B2H adjusting to 2027, and the new comparison to the Base without B2H PAC Bridger Alignment portfolio (the best B2H-excluded portfolio).

Table 10.10 B2H 2027 portfolio costs, cost sensitivities ($ x 1,000)

	Portfolio Costs	Portfolio Cost Compared to B2H 2027 Portfolio
Preferred Portfolio (Base with B2H)	$7,942,428	-$69,090
Base with B2H in 2027	$8,011,517	-
Base without B2H PAC Alignment	$8,207,893	$196,375

Slippage in the schedule from 2026 to 2027 would not be ideal for Idaho Power customers. However, B2H remains the most cost-effective long-term resource.

Regional Resource Adequacy

Northwest Seasonal Resource Availability Forecast

Idaho Power experiences its peak demand in late June or early July while the regional adequacy assessments suggest potential capacity deficits in late summer or winter. In the case of late summer, Idaho Power's demand has generally declined substantially; Idaho Power's irrigation customer demand begins to decrease starting in mid-July. For winter adequacy, Idaho Power generally has excess resource capacity to support the region.

The assessment of regional resource adequacy is useful in understanding the liquidity of regional wholesale electric markets. For the 2021 IRP, Idaho Power reviewed the *Pacific Northwest Loads and Resources Study* by the BPA (White Book). For illustrative purposes, Idaho Power also downloaded FERC 714 load data for the major Washington and Oregon Pacific Northwest entities to show the difference in regional demand between summer and winter.

Topic or Keyword: Construction and Route Alternatives

STAFF'S DATA REQUEST NO. 60.

Please refer to the CPCN Petition, p.17 and Attachments 4, 6, 7 (Proposed Route).

a. Please provide a detailed description and comparison of the BLM preferred route, the Mill Creek Alternative, and the final route (Morgan Lake Alternative) for which the Company is requesting the CPCN. Include in your response a comparison of physical features, proportion of private vs. public land, number of parcels impacted, area of land needed for condemnation, condemnation costs, existing utility corridors and acquired and pending easements, and feedback from local communities (also identify which local communities provided the feedback).
b. Please provide a list of criteria that the Company used to compare these routes.
c. Please explain what process was followed in obtaining feedback from local communities and provide copies of communication with local communities that specifically impacted the selection and rejection of these three route alternatives.
d. Please explain the Company's reasons for choosing the final route for which CPCN is requested.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 60.

a. The following is helpful context related to the Bureau of Land Management ("BLM") preferred route. First, Idaho Power's proposed route in the Energy Facility Siting Council ("EFSC") site certificate and as proposed in PCN 5 incorporates the majority of the BLM's preferred route. The only portion of BLM's preferred route for the entire Project that Idaho Power is not pursuing is the segment in Union County called the Glass Hill Alternative, which is approximately 33.7 miles in length. Second, the EFSC process did not require that Idaho Power pursue the Glass Hill Alternative, regardless of its status as part of BLM's preferred route. Third, while the EFSC process allows applicants to seek approval of alternative routes, EFSC does not require comparative analysis of proposed alternatives. As long as the alternatives independently satisfy EFSC's siting standards and rules, the Council will approve each of the alternatives, which is what happened with B2H with the Council approving each of the alternatives Idaho Power requested.

   Comparative analyses were completed as part of the BLM process. As explained in Section 2.5.1 of BLM's Final Environmental Impact Statement ("FEIS"), the alternative routes in each segment were screened to characterize the key issues and impacts. In the FEIS, the following designations were used when referring to the three routes identified by Staff in this request:
   - Idaho Power's Final Route/Morgan Lake Alternative: Variation S2-B1, Variation S2-C1, and S2-E2.
   - Mill Creek Alternative: As referenced without variations.
   - BLM's preferred route: Glass Hill Alternative with Variations S2-A2, S2-D2, and S2-F2.

<u>Physical Features</u>

Idaho Power has attached hereto the following excerpts from the FEIS relevant to BLM's comparative alternative route analysis related to the impacts on environmental and physical features:

- Attachment 1, Narrative comparison summary – This section of the FEIS summarizes the results of the comparison of alternative routes in Segment 2 - the Blue Mountains area, which encompasses the Morgan Lake Alternative, the Mill Creek Alternative, and the Glass Hill Alternative. Please note, this narrative discusses the Blue Mountains area in general, providing the overall context for the detailed comparison of alternative routes provided as Attachment 3 to this response.
- Attachment 2, Table 2-16 – This table summarizes the key considerations in the comparison of alternative routes. The highlighted column presents the key considerations for Segment 2 – the Blue Mountains area. Similar to Attachment 1, this table provides the overall context for key considerations that were considered in the more detailed comparison provided as Attachment 3.
- Attachment 3, Table 2-23 & Table 2-24 – These tables provide an alternative route summary of land use, agriculture, recreation, transportation, lands with wilderness characteristics, potential congressional designations, visual resources, cultural resources, Native American concerns, National Historic Trails, and socioeconomic and environmental justice concerns. The highlighted rows summarize the data by variation for each alternative: (1) final route/Morgan Lake Alternative (S2-B1, S2-C1, and S2-E2), (2) Mill Creek (no variations), and (3) Glass Hill Alternative (S2-A2, S2-D2, and S2-F2).

Idaho Power also has attached the comparative analysis table provided in the Company's 2017 Supplemental Siting Study, Attachment B-6 to Exhibit B of the EFSC application, which compares the constraints between the Mill Creek Route and the Morgan Lake Alternative (see Attachment 4). Because the Glass Hill Alternative was not included in the EFSC application, it was not included in this table.

<u>Proportion of private vs. public land</u>

Idaho Power has attached hereto the following excerpts from the FEIS relevant to BLM's comparative alternative route analysis related to land ownership:

- Attachment 5, Table S-1 – This table describes the number of miles of federal, state, and private lands crossed by the alternate routes in the Blue Mountains area.

<u>Number of Parcels</u>

There are approximately 31 parcels affected by the Mill Creek Alternative, and approximately 26 parcels affected by the Morgan Lake Route. Idaho Power has not completed a design for the Glass Hill Alternative, and therefore, the Company cannot estimate how many parcels would be affected by that route.

Area of Land Needed for Condemnation and Condemnation Costs

Because Idaho Power has engaged in right-of-way negotiations only with those landowners along the Morgan Lake Route, the Company can estimate the area of land and condemnation costs only for that route, which was included in the Company's Petition as required under OAR 860-025-0030(2)(d)(A). Put another way, Idaho Power cannot estimate how much land would need to be condemned, and how much it would cost to condemn that land, along the Glass Hill Alternative or Mill Creek Alternative routes because Idaho Power has not tried to negotiate with those landowners.

Existing Utility Corridors

The three alternative routes all cross the Wallowa National Forest utility corridor in the same location, and therefore, there is no difference in the number of line miles within a utility corridor. This is the only designated utility corridor in this area.

Acquired and Pending Easements

Idaho Power has engaged in right-of-way negotiations only with those landowners along the Morgan Lake Route. Therefore, the Company has acquired and has pending easements with landowners only along that route. Idaho Power has no acquired or pending easements along the other two routes.

Feedback from Local Communities

In its response to (c) below, Idaho Power explains the local community feedback process it employed and summarizes the feedback that was received in connection thereto.

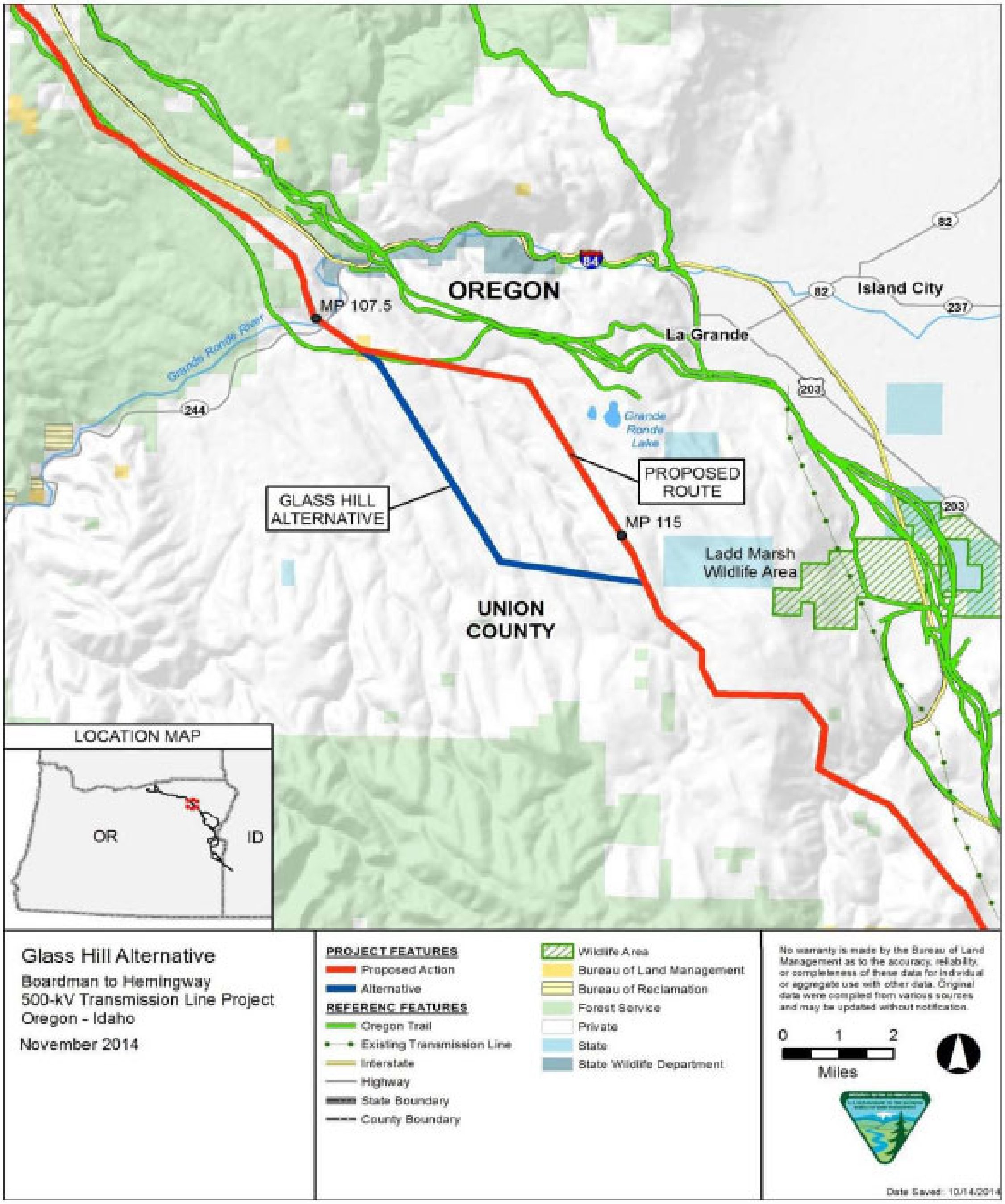
b. In the FEIS, several criteria were used to compare the various routes, including land use, agriculture, recreation, transportation, lands with wilderness characteristics, and potential congressional designations (see Table 2-23 provided in Attachment 3), as well as visual resources, cultural resources, Native American concerns, National Historic Trails, and socioeconomic and environmental justice concerns (see Table 2-24 provided in Attachment 3). In its decision to pursue the Morgan Lake Alternative, Idaho Power considered those criteria as well as public feedback.

c. As explained in Idaho Power's Response to Staff's Data Request 24, the Company engaged with, and solicited feedback from, local communities throughout the decade-plus-long siting process through the Community Advisory Process ("CAP"), BLM's National Environmental Policy Act process, EFSC's site certificate process, and other opportunities for engagement and communication. Idaho Power considered the feedback provided by local communities through those processes, along with the siting opportunities and siting constraints relevant to the particular area. Idaho Power applied that approach to the route alternatives in Union County as well as elsewhere along the B2H project.

Draft EIS Routes

In December 2007, Idaho Power submitted its application to BLM for a right-of-way across BLM-administered lands. In that application, Idaho Power proposed two routes in the vicinity of La Grande: (1) a variation of the Morgan Lake Alternative, which was considered the "Proposed Route" for BLM and National Environmental Policy Act of 1969 ("NEPA") purposes; and (2) the Glass Hill Alternative. Those were the two routes considered in BLM's 2014 Draft Environmental Impact Statement, as shown in the following figure.[1]

[1] BLM Draft Environmental Impact Statement, Figures S-3 (Dec. 19, 2014).



Comments on Draft EIS Routes

The Glass Hill Alternative was confronted with substantial backlash from the affected landowners and other interested parties, some of which formed the Glass Hill Coalition specifically to challenge that route.[2] The Confederated Tribes of the Umatilla Indian

[2] *See, e.g.,* Letter from Glass Hill Coalition to BLM (Mar. 16, 2015), BLM Final EIS, Appendix K at p. K6-156 (attached hereto as Attachment 6).

Reservation ("CTUIR") also expressed disfavor for the Glass Hill Route due to impacts to cultural resources, stating: "The proposed route should be selected rather than the Glass Hill Alternative. Both alternatives will have impacts, but the proposed route introduces fewer new effects."[3] Union County, on the other hand, requested that the Project be located as close to the existing 230-kV line as possible.[4]

Neither the Morgan Lake Alternative nor the Mill Creek Alternative were presented in the 2014 Draft EIS, and accordingly, no comments addressed the same.

BLM's Preliminary Agency-Preferred and Environmentally-Preferred Route

In the Draft EIS, BLM identified the "Proposed Route," which was a variation of the Morgan Lake Alternative, as BLM's preliminary agency-preferred route and preliminary environmentally-preferred route, explaining:

> In the Blue Mountains Segment, the Proposed Action is the Environmentally and Agency Preferred Alternative primarily because the Proposed Action would disturb fewer acres of winter range and cause less vegetation disturbance. When compared to the Glass Hill Alternative, the Proposed Action would disturb 19 fewer acres of winter range during construction and 13 fewer acres during operation. Agency considerations include the closer alignment of the Proposed Action to an existing transmission line for 3 of the 7.5 miles and avoidance of effects on a relatively undisturbed landscape.[5]

Following the Draft EIS and prior to BLM issuing its final decision, BLM released a map of the alternative routes BLM developed in response to the comments received on the Draft EIS. Those new routes included the Morgan Lake Alternative and the Mill Creek Alternative:

- The Morgan Lake Alternative was developed in response to a request made by one of the affected landowners during the BLM's process to locate the route closer to the border of their property rather than bisecting it.[6]
- The Mill Creek Alternative was developed to locate the line closer to the existing 230-kV transmission line.[7]

EFSC Site Certificate

Idaho Power began to develop its route choices for the EFSC process prior to BLM issuing its Record of Decision and Final EIS due to a number of factors, including scheduling constraints related to meeting the Company's in-service date for B2H, timelines required to incorporate the route choices into the thousands of pages of the EFSC application, and uncertainty around BLM's schedule for issuing its decision. In choosing the routes to include in the EFSC application, Idaho Power based its decision

[3] Letter from CTUIR to BLM (Mar. 19, 2015), BLM Final EIS, Appendix K at p. K2-2 (attached hereto as Attachment 7).
[4] Letter from Union County Board of Commissioners to BLM (Mar. 10, 2015), BLM Final EIS, Appendix K at p. K4-62 (attached hereto as Attachment 8).
[5] BLM Draft EIS at p. 2-72 (attached hereto as Attachment 9).
[6] *See* BLM Final EIS at 2-139 (Elk Song Ranch Area) attached hereto as Attachment 10.
[7] BLM Final EIS at 2-23. As a result, Union County confirmed this route-variation option as its preferred alternative.

on the feedback received on the Draft EIS as well as the siting opportunities and siting constraints in the area.

Idaho Power decided not to pursue the Glass Hill Alternative based on the strong opposition of the Glass Hill Coalition, the CTUIR's preference for the "Proposed Route," and BLM's indication in the Draft EIS that the "Proposed Route" was preferable to the Glass Hill Alternative. Instead, Idaho Power chose to pursue the Morgan Lake Alternative and the Mill Creek Alternative. The Company pursued the Morgan Lake Alternative because it was similar to the "Proposed Route" that BLM had indicated a preference for, while minimizing impacts to one of the affected landowners. Idaho Power pursued the Mill Creek Alternative based on the County's request for a route that followed the existing transmission line.

Idaho Power ultimately chose to pursue the Morgan Lake Alternative in its Petition for a Certificate of Public Convenience and Necessity based on feedback received from the local governmental entities, the City of La Grande and Union County, which stated a preference for the Morgan Lake Alternative over the Mill Creek Alternative due to the latter's proximity to the city:

> the La Grande City Council, which represents over the more than 13,000 residents who are in closest proximity to B2H, has stated they object more to the [Mill Creek Alternative] than the Morgan Lake Alternative.[8]
>
> Union County's request of IPC in development of the B2H line to stay out of cultivated agricultural areas and immediate view shed of the City of La Grande, based on the two routes proposed in the current application, the Morgan Lake Alternative would have less visually impacts to the City of La Grande than the proposed routes.[9]

d. See Idaho Power's response to (c) above.

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[8] Letter from City of La Grande to Oregon Department of Energy (Apr. 27, 2018) (attached hereto as Attachment 11).
[9] Letter from Union County to Oregon Department of Energy (Nov. 21, 2018) (attached hereto as Attachment 8).

would cross and result in potentially significant impacts on historic properties of religious and cultural significance to Indian tribes (referred to as TCPs by the Navy [Navy 2015]) in the general area of the southeast corner of the NWSTF Boardman, and avoids areas identified by the county for potential windfarm development.

The East of Bombing Range Road Alternative would cross densely developed irrigated agriculture; some of the center-pivots could not be spanned and operations would be affected. Also, there are Washington ground squirrel occupied colony avoidance areas and suitable habitat (where not developed with agriculture) south and east of the NWSTF Boardman. The Longhorn Alternative was developed before the Draft EIS to follow section lines with the intent of minimizing impacts on agricultural lands in the area; however, it intersects with the east-west portion of the Applicant's Proposed Action Alternative, which exhibits other impacts (described below).

Three of these alternatives to the south of the Longhorn Substation—Applicant's Proposed Action Alternative, East of Bombing Range Road, and Applicant's Proposed Action – Southern Route Alternative—turn east at the southeast corner of the NWSTF Boardman sharing the same alignment. These routes do not parallel existing linear infrastructure. They cross east through areas of potential windfarm development and then intersect with the Longhorn Alternative, also sharing the same alignment east to the end of Segment 1. These four alternatives cross several miles of dense agricultural areas (predominantly dryland farming). The routes cross substantially more Washington ground squirrel habitat[7] than the environmentally preferable or southernmost east-west alternative routes, and cross small areas of occupied colony dispersal areas and occupied colony avoidance area.

The West of Bombing Range Road – Southern Route Alternative uses the southernmost east-west route, which also does not parallel existing linear infrastructure. This alternative crosses through an area of more rugged terrain that is much less developed. The alternative route was developed by Morrow and Umatilla counties to minimize effects on areas of potential windfarm development. This southernmost route crosses through agricultural areas (predominantly dryland farming south and east of the NWSTF Boardman and southwest of the Pilot Rock area), but crosses much less than the Applicant's Proposed Action Alternative; and crosses Washington ground squirrel suitable habitat[7].

At the southern end of the Segment 1, from the area of Kamela and onto the Wallowa-Whitman National Forest, the routing that is environmentally preferable is the same as the Applicant's Proposed Action Alternative and Agency Preferred Alternative (Variation S1-B2). Variation S1-B2 is the USFS-preferred routing on the National Forest, which is within the USFS-designated utility corridor over Variation S1-B2 because it is located farther from the Oregon NHT and associated sites (i.e., NPS Auto Tour Route, Blue Mountains Interpretive Park High Potential Historic Site) and, therefore, would have less effect on visual resources; and it would avoid unspecified places of Native American concern.

2.6.1.2 Segment 2—Blue Mountains

The environmentally preferable action alternative in Segment 2 is a combination of Variation S2-A2 on the Wallowa-Whitman National Forest, the Glass Hill Alternative with Variation S2-D2, and Variation S2-F2 along the southern portion of Segment 2. The intent for this alternative is to parallel the existing

230-kV line in the northern portion of the segment, diverge to the west to avoid the community of La Grande and associated residences and agriculture, and avoid/or minimize impacts on the Oregon NHT and associated sites, and views of the proposed transmission line.

In the northern portion of the segment, the preference of the USFS on the Wallowa-Whitman National Forest is to colocate closer to the existing 230-kV transmission line within the USFS-designated utility corridor to the extent practicable (Variation S2-A2). The intent is to minimize vegetation removal and surface disturbance by using the existing service roads associated with the existing 230-kV transmission line.

Both the environmentally preferable action alternative and the Applicant’s Proposed Action Alternative diverge south from the 230-kV line to avoid impacts on the community of La Grande and associated residences and agriculture. The environmentally preferable action alternative crosses the least amount of field crops. Even though much of the Mill Creek Alternative parallels an existing 230-kV transmission line, the Mill Creek Alternative would still affect the community, residences, and agriculture.

Along the environmentally preferable action alternative views from the NPS auto tour route are partially screened by topography and vegetation, which is not the case along the other two alternatives to the east. The environmentally preferable action alternative avoids paralleling the Blue Mountain high-potential trail route segment and adjacent contributing trail segments. The route would have the lowest impact on the Oregon NHT as it is the farthest alternative route from the trail. The environmentally preferable action alternative would affect the lowest number of previously recorded cultural resource sites.

Since the environmentally preferable action alternative does not parallel the existing 230-kV transmission line and, instead, traverses partially forested lands that are mostly undeveloped, this route would have increased impacts on landscape character and scenic quality compared to the Mill Creek Alternative. Impacts on views, including visibility from travel routes, residential viewers, and the recreation viewers at Morgan Lake would be reduced compared to the Applicant’s Proposed Action Alternative and Mill Creek Alternative.

Along the southern portion of Segment 2, Variation S2-F2 (environmentally preferable) shares the same alignment with the Agency Preferred Alternative to the end of Segment 2. Variation S2-F2 is environmentally preferable because it parallels an existing 230-kV line, avoids agricultural lands, and reduces effects on Greater Sage-Grouse and the Oregon NHT more than the Applicant’s Proposed Action Alternative. Variation S2-F2 crosses Greater Sage-Grouse General Habitat Management Areas (GHMA), but as is the case with the other alternative routes, it would not cross Priority Habitat Management Areas (PHMA) and no leks occur within 3.1 miles. Based on the alignment of Variation S2-F2, impacts on views from residences and Interstate 84 would be reduced further based on the B2H Project’s colocation with an existing 230-kV transmission line.

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment					
Segment 1 – Morrow-Umatilla	**Segment 2 – Blue Mountains**	**Segment 3 – Baker Valley**	**Segment 4 – Brogan**	**Segment 5 – Malheur**	**Segment 6 – Treasure Valley**
Vegetation					
Impacts on federally listed species are not anticipated along any of the alternative routes in Segment 1. Based on the available data for sensitive plant species occurrence, this alternative route along with the Interstate 84 Alternative, would affect the least number of sensitive plant occurrences. Compared to the Applicant's Proposed Action Alternative, the Applicant's Proposed Action – Southern Route Alternative, and the West of Bombing Range Road – Southern Route Alternative, this alternative avoids crossing the Research Natural Area (RNA-B) on the Naval Weapons System Training Facility (NWSTF) Boardman established to preserve remnant high-quality sagebrush vegetation communities.	This alternative route and all other alternative routes could affect known occurrences of the federally listed Howell's spectacular thelypody, but any impacts are likely to be limited in intensity given the distance between known occurrences and all alternative routes. Moderate residual impacts on sensitive plant species could occur for this alternative route and all other alternative routes considered, with all alternatives resulting in similar amounts of impacts.. This alternative route and all other alternative routes would result in predominantly moderate residual impacts on vegetation communities, with all alternatives resulting in similar amounts of impacts.	This alternative route and all other alternative routes could affect known occurrences of the federally listed Howell's spectacular thelypody, but any impacts are likely to be limited in intensity given the distance between known occurrences and all alternative routes. Based on the available data for sensitive plant species occurrence, this alternative route would affect the fewest sensitive plant occurrences. This alternative route and all other alternative routes would result in predominantly moderate residual impacts on vegetation communities. Compared to the Timber Canyon Alternative, this alternative route would result in fewer residual impacts on vegetation communities due to its shorter length.	Impacts on federally listed species are not anticipated along any of the alternative routes in Segment 4. Based on the available data for sensitive plant species occurrence, this alternative route would affect the greatest number of sensitive plant occurrences. This alternative route would result in the least impacts on vegetation communities, as it primarily crosses Non-native Grasslands.	Impacts on federally listed species are not anticipated along any of the alternative routes in Segment 5. Based on the available data for sensitive plant species occurrence, this alternative route would affect the greatest number of sensitive plant occurrences. This alternative route would result in the least impacts on vegetation communities as it is the shortest alternative route considered and crosses Tall Sagebrush Steppe vegetation communities to the least extent. It also avoids the Owyhee River Below the Dam ACEC and potential impacts on the rare black cottonwood galleries in the ACEC.	Impacts on federally listed species are not anticipated along any of the alternative routes in Segment 6. Based on the available data for sensitive plant species occurrence, Variation S6-A2 of this alternative route would affect a greater number of sensitive plant occurrences. Variation S6-B2 of this alternative route would affect sensitive plant occurrences similarly to the other route variation. All variations considered in Segment 6 would result in predominantly moderate impacts on vegetation communities.
Wildlife					
Crosses Washington ground squirrel suitable habitat but avoids known occupied colony avoidance and dispersal areas, although none of the suitable habitat crossed has been surveyed for colonies. Compared to the Applicant's Proposed Action Alternative, the Applicant's Proposed Action – Southern Route Alternative, and the West of Bombing Range Road – Southern Route Alternative, this alternative avoids high impacts on occupied Washington ground squirrel habitat on the NWSTF Boardman, including habitat on the NWSTF Boardman Washington ground squirrel Resource Management Area (RMA). Compared to the West of Bombing Range Road – Southern Route, which would have the greatest impact on federally endangered gray wolves because Oregon Department of Fish and Wildlife (ODFW)-designated wolf use areas occur in the study corridor, ODFW-designated wolf use areas do not occur in the study corridors of this alternative route or the other alternative routes. No key issues identified for big game.	Crosses Greater Sage-Grouse General Habitat Management Area (GHMA) but along with the other alternative routes, would not cross Priority Habitat Management Area (PHMA) and no leks occur within 3.1 miles. Impacts on migratory bird habitat would be less with this alternative than the other alternatives as the Ladd Marsh Important Bird Areas would not be crossed. Along with the Applicant's Proposed Action Alternative, this alternative would have slightly less effect on big game from crossing less big game habitat than the Mill Creek Alternative.	This alternative route avoids Greater Sage-Grouse PHMA to a greater extent than the Applicant's Proposed Action Alternative, and where it does cross PHMA, it is located on the periphery of PHMA and is colocated with existing anthropogenic disturbances. Along with the other alternative routes, this alternative route would have less impact on big game from crossing less big game habitat than the Timber Canyon Alternative.	This alternative route would have the least impact on Greater Sage-Grouse, as it largely avoids PHMA. Where PHMA is crossed, the alternative route follows the outer edge of PHMA, which is closer to anthropogenic disturbances and, thus, represent lower quality habitat. The alternative route also crosses less GHMA, and crosses within 3.1 miles of a fewer number of leks than the other two alternative routes. No key issues identified for big game.	This alternative route would have the least impact on Greater Sage-Grouse, as it crosses the least amount of GHMA. Where GHMA is crossed, the route follows the outer edge of GHMA, which is closer to anthropogenic disturbances and, thus, represent lower quality habitat. Along with the other alternative routes, would not cross PHMA and no leks occur within 3.1 miles. This alternative route would have the least impact on Columbia spotted frog, as it crosses less habitat overall than the other alternative routes. No key issues identified for big game.	The route variations of this alternative route, along with the other route variations, cross Greater Sage-Grouse Important Habitat Management Area (IHMA) and do not cross GHMA, PHMA, and no leks occur within 3.1 miles. The IHMA crossed by Variation S6-A2 of this alternative route are not identified as lands used by Greater Sage-Grouse, but are lands that serve as management buffers for PHMA and to connect patches of PHMA. Therefore, identifiable impacts on Greater Sage-Grouse habitat in IHMA would not be expected. Variation S6-B2 is farther from the existing 500-kV transmission line than Variation S6-B1 and is farther from the edge of IMHA, and therefore may be located in an area of higher quality habitat. The route variations of this alternative route would have the least impact on Columbia spotted frog, as it crosses less habitat overall than the other route variations. No key issues identified for big game.

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment

Segment 1 – Morrow-Umatilla	Segment 2 – Blue Mountains	Segment 3 – Baker Valley	Segment 4 – Brogan	Segment 5 – Malheur	Segment 6 – Treasure Valley
Fisheries					
This alternative route crosses streams that support steelhead, Chinook salmon, bull trout, and associated protected fish habitats, as well as streams that support redband trout. Along with the West of Bombing Range Road – Southern Route Alternative, this alternative is anticipated to result in greater residual impacts on fish resources than the other alternative routes as a greater distance of streams that support redband trout and Endangered Species Act (ESA)-listed fish, critical habitat, and/or Essential Fish Habitat (EFH) are crossed.	This alternative route crosses streams that support steelhead, Chinook salmon, bull trout, and associated protected fish habitats, as well as streams that support redband trout. This alternative is anticipated to result in greater residual impacts on fish resources than the other alternative routes as a greater distance of streams that support redband trout, ESA-listed fish, and associated protected fish habitats are crossed.	Along with the other alternative routes, this alternative route does not cross streams that support ESA-listed fish, critical habitat, and/or EFH; but does cross streams that support redband trout. Compared to the Timber Canyon Alternative, this alternative is anticipated to result in less residual impact on fish resources as less distance of streams that support redband trout are crossed.	Along with the other alternative routes, this alternative route does not cross streams that support ESA-listed fish, critical habitat, and/or EFH; but does cross streams that support redband trout. This alternative is anticipated to result in greater residual impact on fish resources than the other alternative routes as a greater distance of streams that support redband trout are crossed.	Along with the other alternative routes, this alternative route does not cross streams that support ESA-listed fish, critical habitat, and/or EFH; but does cross streams that support redband trout. This alternative is anticipated to result in greater residual impact on fish resources than the other alternative routes as a greater distance of streams that support redband trout are crossed.	Along with the other route variations, the route variations of this alternative route do not cross streams that support ESA-listed fish, critical habitat, and/or EFH; but do cross streams that support redband trout. For each route variation option, the route variations cross the same streams that support redband trout for the same distance; therefore, residual impacts on fish resources are anticipated to be similar with any of the Applicant's Proposed Action route variation options.
Land Uses					
The northern portion of route is colocated with Interstate-84 and avoids windfarm development. Variation S1-A2 parallels an existing 230-kV line between the areas of Echo and Rieth. From Kamela and on to Wallowa-Whitman National Forest routing is within the USFS-designated utility corridor. This alternative avoids impacts on NWSTF Boardman property compared to the Applicant's Proposed Action Alternative, West of Bombing Range Road- Southern Route Alternative, and East of Bombing Range Road Alternative. Crosses less military airspace than all other alternative routes and route variations and minimizes impacts to training operations due to this alternative's colocation with Interstate 84. Avoids impacts on research natural area associated with the Applicant's Proposed Action Alternative. None of the alternative routes within Segment 1 are located in a West-wide Energy Corridor (WWEC).	Variation S2-A2 is preferred by USFS for colocation closer to the existing 230-kV transmission line within the USFS-designated utility corridor on the Wallowa-Whitman National Forest. This alternative would minimize vegetation removal over other alternative routes by using existing service roads associated with the existing 230-kV line. In southern portion, Variation S2-F2 provides greater opportunity than other alternative routes for colocation with the existing 230-kV transmission line. This route minimizes impacts on community of La Grande, residences, and other associated land uses. This alternative and the Applicant's Proposed Action Alternative share the same alignment in this area and are located within an USFS-designated utility corridor for 1.3 miles. This is less than the Mill Creek Alternative (2.5 miles). No alternative routes are located within a WWEC. This alternative also is preferable for recreation as it is the farthest distance from the Morgan Lake Recreation Area.	The northern portion of alignment colocated closer to the existing 230-kV transmission line. Also, Variation S3-B4 parallels the existing 230-kV line along most of the north-south portion of the routing. Where the alternative route turns to the southeast, the route variation diverges from the 230-kV line and parallels an existing 138-kV transmission line and Interstate 84. Variation S3-C5 reduces impacts on privately owned lands in and around the community of Durkee. Avoids impacts on community and residences through colocation with existing facilities. Approximately 1.3 miles of Variation S3-C3 and 1.4 miles of the Applicant's Proposed Action Alternative, Flagstaff A Alternative, Timber Canyon Alternative, Flagstaff A-Burnt River Alternative and Flagstaff B are located within a WWEC. No other alternative routes are within a utility corridor. Less than 0.1 mile of Variation S3-B4 is located within a right-of-way avoidance area. No other alternative routes or route variations are located within a right-of-way avoidance area.	The northern portion of the alternative route parallels Interstate 84, and parallels the exiting 138-kV transmission line in the area of Farewell Bend. Variations S4-A2 allows for colocation closer to the existing 138-kV line. Avoids impacts on community and residences through colocation with existing facilities. This alternative uses 3.2 miles of a WWEC and approximately 1.8 miles of BLM-designated utility corridor while the other alternative routes are not located in any utility corridors.	North of Double Mountain, the route crosses private land to avoid crossing lands with wilderness characteristics south of the route. Variation S5-B2 avoids crossing a segment of the Owyhee River identified by the BLM as suitable for designating as a National WSR (Owyhee River Below the Dam suitable WSR segment). Just north of the river crossing, the route enters and remains within a BLM-designated utility corridor nearly to the end of Segment 5. Approximately 0.8 miles of this alternative is located within WWEC, which is less than the Malheur S and A alternatives. It also uses 13.3 miles within BLM-designated utility corridor, which is more than both the Malheur S and A Alternatives. Approximately 0.7 mile is identified as right-of-way avoidance which is also less than the Malheur S and A Alternatives. No other alternative routes are located within utility corridors.	Applicant's Proposed Action Alternative and Variations S6-A2 and S6-B2 Located within and along the southern edge of the BLM-designated utility corridor to maximize future use of this corridor. This alternative would result in greatest use of WWEC and BLM-designated utility corridor than the other route variations in Segment 6.
Agriculture					
Because the northern portion of this alternative is not subject to the NWSTF Boardman height restrictions as other alternatives are, it allows tower structure heights to be taller and span distances	The environmentally preferable action alternative crosses the least field crops of all alternatives in Segment 2. The Mill Creek Alternative crosses the least high-value soils and important farmland, though the	The Flagstaff B – Burnt River West Alternative crosses the fewest miles of center pivot irrigation except for the Timber Canyon Alternative. It also crosses the least miles of other mechanized irrigation, field	The environmentally preferable action alternative (Tub Mountain South Alternative) crosses the most irrigated farmland of any alternative in Segment 4, though it does cross fewer miles of pivot	All alternatives have similarly low impacts on irrigated agriculture and crop production, though the Applicant's Proposed Action Alternative has the least. However, environmentally preferable action	The variations in Segment 6 have similarly low impacts on existing agriculture. However, Variation S6-A2 would affect more important farmland and high-value soils than Variation S6-A1. Variation S6-

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment

Segment 1 – Morrow-Umatilla	Segment 2 – Blue Mountains	Segment 3 – Baker Valley	Segment 4 – Brogan	Segment 5 – Malheur	Segment 6 – Treasure Valley
greater than those that would be used on other alternatives such as the East of Bombing Range Road Alternative. Thus, while the Interstate 84 Alternative passes through an area that has the most pivot irrigation of all alternatives, all pivots could be spanned except one on Variation S1-A2. Conversely, a minimum of 23 pivots along the East of Bombing Range Road Alternative could not be spanned. The Interstate 84 Alternative also avoids all of the tree farm and crosses two confined animal feeding operations in locations where they can be spanned. Conversely, the Longhorn Alternative crosses two confined animal feeding operations in locations that could not be spanned and would have high impacts long-term. This alternative would affect fewer acres of lands enrolled in Conservation Reserve Program contracts than most of the other alternatives (except for West of Bombing Range Road – Southern Route and Interstate 84 – Southern Route). Variation S1-A2 is preferable to S1-A1 because there is less land cultivated for field crops under Variation S1-A2 (approximately 4.2 miles less than Variation S1-A1). While there is more center-pivot irrigation crossed on Variation S1-A2, there is much less cultivated cropland crossed, and because of this, this variation would have fewer impacts on existing agriculture. Variation S1-A2 crosses 10 fewer miles of prime farmland if irrigated, 9.7 fewer miles of high-value soils, and 6.4 more miles of farmland of statewide importance compared to Variation S1-A1.	environmentally preferable action alternative still crosses fewer miles than the Applicant's Proposed Action Alternative. There is no irrigated farmland or land enrolled in the Conservation Reserve Program crossed by any alternative in Segment 2. The variations have few differences with the exception of Variations S2-F1 and S2-F2. Variation S2-F2 crosses fewer miles of field crops, prime farmland if irrigated, farmland of statewide importance, and high-value soils than Variation S2-F1.	crops, high-value soils, and important farmland of any alternative in Segment 3. Variation S3-A2 crosses fewer miles of irrigated agriculture and important farmland than Variation S3-A1 (while neither cross high-value soils nor lands enrolled in the Conservation Reserve Program). Variation S3-B4 avoids center pivot irrigation completely, but does affect the most other mechanized irrigation of these variations. This variation also crosses the most high-value soils, but ranks in the middle-to-high range for important farmland affected. None of these variations impact lands enrolled in the Conservation Reserve Program.	irrigation than the Willow Creek Alternative. It also avoids a landing strip used for agriculture that the Willow Creek Alternative crosses. This alternative crosses the most high-value soils and important farmland of any alternative in Segment 4, and all alternatives avoid lands enrolled in the Conservation Reserve Program. All variations have similar impacts on agriculture.	alternative crosses more than double the miles of high-value soils of the other alternatives in Segment 5. Variation S5-B2 crosses more irrigated agriculture and important farmland, but less high-value soils compared to Variation S5-B1.	B2 would affect less important farmland and high-value soils than S6-B1.
National Historic Trails/Study Trails					
Oregon NHT Avoids crossing and highly affecting the Boardman high-potential route segment and a contributing trail segment (Well Spring Segment) along Bombing Range Road. Moderate impacts on views from National Park Service (NPS) auto tour route (Interstate 84). Route avoids the area of high impacts west of Pendleton based on the alignment of Variation S1-B2.	**Oregon NHT** Avoids area of high impacts on views from the NPS auto tour route (Interstate 84) west of La Grande based on the alignment of Variation S2-A2, where views are partially screened by topography and vegetation. High impacts on views from two trail-associated cultural sites west of Morgan Lake Park.	**Oregon NHT** All alternatives in Segment 3, except for the Timber Canyon Alternative, would highly impact views from the National Historic Oregon Trail Interpretive Center (NHOTIC). Based on the alignment of Variation S3-B4, west of the NHOTIC, this route would be located adjacent to an existing 230-kV transmission line at the edge of development in Baker Valley, thus reducing	**Oregon NHT** All alternatives in Segment 4 would highly affect views from the NPS auto tour route (Interstate 84) north of Huntington. Based on the alignment of the Tub Mountain South Alternative, views from the Birch Creek Interpretive Site (located in the Oregon Trail ACEC – Birch Creek portion), adjacent to contributing trail segments, and Alkali Springs high-potential route segment	**Oregon NHT** Since there are no high-potential historic sites, high-potential historic segments, portions of the NPS auto tour route, or contributing trail segments located in the trail-specific study area for the Oregon NHT in Segment 5, the B2H Project would impact the Oregon NHT minimally.	**Oregon NHT** There would be no key issues since views from the Givens Hot Spring high-potential historic site would be affected minimally by the B2H Project where it would parallel an existing 500-kV transmission line that is already located closer to the historic site. Based on the alignment of Variation S5-B2, these effects would be reduced because the B2H Project components

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment					
Segment 1 – Morrow-Umatilla	**Segment 2 – Blue Mountains**	**Segment 3 – Baker Valley**	**Segment 4 – Brogan**	**Segment 5 – Malheur**	**Segment 6 – Treasure Valley**
High impacts on views from contributing trail segment southeast of the community of Echo, where adjacent to a smaller existing transmission line. **Lewis and Clark NHT** Similar to all Segment 1 alternatives, moderate impacts would occur on views from the Lewis and Clark NHT auto tour route (U.S. Highway 730). **Study Trails** Moderate impacts on views from Umatilla River Route and Columbia River to the Dalles Study Trail, where the trail would be crossed north of the community of Echo Low impacts on other trails under study.	Route avoids paralleling the Blue Mountain high-potential route segment and adjacent contributing trail segments (as well as other trail-associated cultural sites) by not paralleling the existing 230-kV transmission line near La Grande. Similar to all alternatives in the southern portion of Segment 2, high impacts on views from the NPS auto tour route (Interstate 84) would occur south of Ladd Canyon but, based on the alignment of Variation S2-F2, an existing 230-kV transmission line would be paralleled at the crossing of the auto tour route—incrementally reducing the extent of change (visual contrast) within the viewshed. **Study Trails** No study trails located within the NHT study area for Segment 2.	the extent of change (visual contrast) within the viewshed. Similar to all Segment 3 alternatives except the Timber Canyon Alternative, views from the NPS auto tour route (Interstate 84) east of Pleasant Valley would be highly affected. By siting this route away from the community of Durkee, trail resources including contributing trail segments and the NPS auto tour route (Interstate 84) would be avoided, thereby reducing the extent of impacts on the Oregon NHT compared to other alternative routes. **Study Trails** Based on the alignment of Variation S3-B4, views of the B2H Project would be screened by topography west of the NHOTIC—resulting in low impacts on views from the Goodale's Cutoff Study Trail.	also would be highly affected by the environmentally preferable action alternative. **Study Trails** Moderate impacts on views from the Olds Ferry Road Study Trail would occur south of Farewell Bend in context with an existing transmission line and Interstate 84.	**Study Trails** All alternatives in Segment 5 would highly affect views from the Meek Cutoff Study Trail west of Vale in Malheur Canyon and the benchlands to the south.	would be located farther from the historic site. **Study Trails** No study trails located within the NHT study area for Segment 6.
Visual Resources					
Landscape Character and Scenic Quality This route would result in reduced impacts on landscape character and scenic quality since the B2H Project would traverse agricultural and ranching settings with a high degree of existing modifications compared to landscapes further to the south. Variation S1-A2 would result in increased impacts on the Umatilla River landscape by crossing and paralleling the river, but overall, result in reduced impacts on other landscapes by paralleling an existing 230-kV transmission line. **Views** Impacts on views would be increased along this route compared to other alternatives, because Interstate 84 is a major travel corridor, and based on the presence of more residential viewers that would be affected. **Conformance with Management Objectives** All alternatives would result in a similar extent of nonconformance with visual quality objectives (VQOs) on lands managed by the USFS.	**Landscape Character and Scenic Quality** Since this route does not parallel the existing 230-kV transmission line and instead traverses partially forested lands that are mostly undeveloped, this route would have increased impacts on landscape character and scenic quality compared to the Mill Creek Alternative. **Views** Impacts on views, including visibility from travel routes, residential viewers, and the recreation viewers at Morgan Lake would be reduced when compared to the Applicant's Proposed Action Alternative and Mill Creek Alternative. Based on the alignment of Variation S2-F2, impacts on views from residences and Interstate 84 would be further reduced based on the B2H Project's colocation with an existing 230-kV transmission line. **Conformance with Management Objectives** All alternatives would have a similar extent of nonconformance with VQOs on lands managed by the USFS with this route having the least acres of nonconformance.	**Landscape Character and Scenic Quality** Since this route does not parallel Interstate 84 in proximity to Durkee and adjacent existing transmission lines, and instead traverses steeply rolling hills that are mostly undeveloped, this route would result in increased impacts on landscape character and scenic quality compared to the Applicant's Proposed Action, Flagstaff A, and Flagstaff B alternatives. Based on the alignment of Variation S3-B4 near Baker City, this route would result in reduced impacts on scenic quality based on its parallel alignment with the existing 230-kV transmission line that has already modified the existing landscape setting. **Views** Impacts on residential views in Durkee and views from I-84 would be reduced by selecting this route west of the community and interstate highway. Note, impacts on the NHOTIC are described under National Historic Trails. **Conformance with Management Objectives** This route would result in nonconformance with BLM visual resource management	**Landscape Character and Scenic Quality** This route would result in the least amount of impact on landscape character and scenic quality since existing transmission lines would be paralleled for the greatest distance, and because a greater amount of agricultural and ranching landscapes, with existing cultural modifications, would be crossed **Views** As compared to other alternatives, impacts on views would be increased based on the environmentally preferable action alternative's parallel alignment with the Interstate 84 viewing platform. **Conformance with Management Objectives** This route would result in non-conformance with BLM VRM Class III objectives adjacent to the Birch Creek Interpretive Site (Oregon NHT), requiring a project-specific RMP amendment.	**Landscape Character and Scenic Quality** This route would result in the greatest amount of impact on landscape character and scenic quality since mostly undeveloped landscapes would be traversed. Additionally, this route does not parallel the existing 500-kV transmission line which already has modified existing settings within the vicinity of the Malheur A and Malheur S alternatives. Based on the alignment of Variation S5-B2, this route would result in reduced impacts on the Owyhee River landscape by siting the B2H Project farther to the east in agricultural lands, as compared the Applicant's Proposed Action Alternative. **Views** Impacts on recreation views would be reduced on this route compared to the other alternatives and variations, because the Owyhee River would be crossed at the mouth of the canyon based on the alignment of Variation S5-B2. Impacts on residential viewers, located in the agricultural lands northeast of Owyhee River, would be increased based on the	**Landscape Character and Scenic Quality** This route generally parallels an existing 500-kV transmission line based on the alignments of Variations S6-A2 and S6-B2. In some areas, due to skylining of transmission line structures, the B2H Project would highly affect scenic quality. **Views** Moderate impacts on views from residences along Jump Creek Road and Poison Creek Road, as well as on views from recreation viewing platforms, would occur along this route. These impacts on views would be similar for the other variations in Segment 6. **Conformance with Management Objectives** All alternatives and routes in Segment 6 would meet the BLM VRM Class objectives crossed.

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment					
Segment 1 – Morrow-Umatilla	**Segment 2 – Blue Mountains**	**Segment 3 – Baker Valley**	**Segment 4 – Brogan**	**Segment 5 – Malheur**	**Segment 6 – Treasure Valley**
		(VRM) Class II objectives in Burnt River Canyon, requiring a project-specific RMP amendment. By being sited west of the NHOTIC would not require a plan amendment to the BLM VRM Class III lands in Virtue Flat.		alignment of Variation S5-B2 since more residences would have views of the B2H Project. **Conformance with Management Objectives** All alternatives in Segment 5 would result in nonconformance with BLM VRM Class II or III objectives at the crossing of the Owyhee River. This route, based on the alignment of Variation S5-B2, would result in the least amount of nonconformance with BLM VRM Classes.	
Cultural Resources					
Even though the environmentally preferable action alternative is not the shortest or the one with the lowest number of previously recorded sites that would be potentially affected, it avoids highly significant resources that are located in proximity to, or, are crossed by the other six alternative routes considered under Segment 1. These resources are: • NRHP-listed Well Spring Segment of the Oregon NHT • Two historic properties of religious and cultural significance to Indian tribes in the NWSTF Boardman (resources of concern to the CTUIR) • Sand Hollow Battlefield 1848 (resource of concern to the CTUIR) • Cultural landscape in the McKay Creek area; this area is important for both pre-contact and historic resources and is a place of importance in the contemporary culture of the CTUIR Although the environmentally preferable action alternative does cross the Oregon NHT, it crosses an unrecorded segment of the trail, which is of unknown condition. Note: Despite the environmentally preferable action alternative distance from the aforementioned culturally significant resources, this alternative route has the second highest miles of high cultural resource sensitivity (result of three historic canals crossed).	The environmentally preferable action alternative potentially would affect the lowest number of previously recorded sites. The potential for affecting a greater number of known, high sensitivity sites is the same for the environmentally preferable action alternative and the Applicant's Proposed Action Alternative but lower for the Mill Creek Alternative. Even though the Mill Creek Alternative crosses the lowest number of miles of high cultural resource sensitivity, a historic property of religious and cultural significance to Indian tribes (traditional fishery/campsite) is found along the Mill Creek Alternative (indirect effects area of potential effect [APE]). This sensitive resource also has been identified along one of the route variations (Variation S2-B2) considered for the Applicant's Proposed Action Alternative (indirect effects APE). All three alternative routes cross the same unrecorded segment (unknown condition) of the Oregon NHT and parallel one previously recorded, contributing segment of the trail along their western extent. Overall, the environmentally preferable action alternative would have the lowest overall impact on the Oregon NHT, as this alternative route is located farthest from the trail. Avoids crossing the Ladd Marsh Wildlife Area, which has potential for sites of cultural importance.	Potential impacts along the environmentally preferable action alternative would be substantially lower than the other alternative routes considered in Segment 3, except for the Flagstaff B – Durkee Alternative (lowest potential impacts). The potential for affecting a greater number of previously recorded and high sensitivity sites also is lower along these two alternative routes (primarily along the Flagstaff B – Durkee Alternative). Potential impacts on the Oregon NHT would be similar to the other alternative routes considered in Segment 3, except that the environmentally preferable action alternative avoids multiple crossings of the historic trail (previously recorded segments) near Durkee, resulting in the potential for less intense impacts. The Flagstaff B – Durkee Alternative would have the lowest overall impact on the Oregon NHT, as the southern portion of this alternative route is located farthest from the trail. Based on the alignment of Variation S3-B4, potential effects on the Goodale's Cutoff Study Trail would be reduced because the B2H Project components would be located farther from previously recorded segments of the Study Trail. Compared to the Applicant's Proposed Action Alternative, the environmentally preferable action alternative lies farther from numerous historic resources associated with the Virtue Flat Mining Area, Goal 5 Resources, and established communities (e.g., Durkee, Weatherby).	Compared to the other alternative routes considered in Segment 4, the environmentally preferable action alternative potentially would affect the highest number of previously recorded sites. In addition, this alternative route crosses more miles of high cultural resource sensitivity than the other alternative routes. Potential impacts on the Oregon NHT and trail-associated sites, along the environmentally preferable action alternative would be more substantial than for the other alternative routes, as it crosses five unrecorded, intact segments of the trail. Avoids one area of Native American concern (Striped Mountain). Compared to the environmentally preferable action alternative, the other two alternative routes considered under Segment 4 avoid the Olds Ferry Road Study Trail, human burial sites of tribal significance, the Farewell Bend, and one broad cultural landscape that extends from the Farewell Bend area to the south. There is the potential for indirect effects on unrecorded, significant sites near the Tub Mountain, the Snake River, Huntington, and the Tom Creek areas, along the environmentally preferable action alternative. The Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, the Burns Paiute Tribe, and the CTUIR have expressed concerns about the proximity	The environmentally preferable action alternative potentially would affect the lowest number of previously recorded sites. However, the potential for affecting a greater number of known, high-sensitivity sites is higher along this alternative route than along the other two alternative routes considered in Segment 5. No potential impacts on the Oregon NHT and trail-associated sites were identified, as segments of the Oregon NHT are not located in the study corridor for the alternative routes considered under Segment 5. Potential impacts on the Meek Cutoff Study Trail (previously recorded, noncontributing segment) would be the same for all three alternative routes, since these alternative routes follow the same alignment in proximity to the Study Trail. Of the alternative routes considered in Segment 5, the environmentally preferable action alternative lies farther from historic resources associated with the Owyhee Dam Historic District (NRHP-listed). Avoids passing through an area of Native American concern (Negro Rock Canyon [east of Sand Hollow in Malheur County]). There is the potential for direct effects on undocumented, significant sites of tribal significance in or near this sensitive area.	The environmentally preferable action alternative crosses areas of high cultural resource sensitivity, attributed to six previously recorded sites with a high sensitivity index. Based on the alignment of Variation S6-A2, potential effects on Graveyard Point (historic resource and Native American concern) and the NRHP-listed Poison Creek Stage Station would increase because the B2H Project components would be located closer to these cultural resources. One extensive, pre-contact lithic procurement area has been documented within the boundaries of Graveyard Point in the indirect effects APE. Tribal input from the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation indicates the Tribes' preference for Variation S6-A1 (Applicant's Proposed Action Alternative) instead of Variation S6-A2, since Variation S6-A1 (Applicant's Proposed Action Alternative) lies farther from Graveyard Point. This culturally sensitive area is situated more than 1 mile to the north/northeast of the route variation.

Table 2-16. Summary of Key Considerations Regarding the Environmentally Preferable Action Alternative by Segment					
Segment 1 – Morrow-Umatilla	**Segment 2 – Blue Mountains**	**Segment 3 – Baker Valley**	**Segment 4 – Brogan**	**Segment 5 – Malheur**	**Segment 6 – Treasure Valley**
		Avoids numerous pre-contact sites (e.g., rock features, rockshelters, lithic procurement areas) and one culturally sensitive area of Native American concern (Medical Hot Springs).	of the B2H Project to Farewell Bend (major tribal river crossing and tribal gathering area). The environmentally preferable action alternative passes within 1 mile of Farewell Bend. The CTUIR supports paralleling the transmission line and Interstate 84 to the Farewell Bend area, but preferred the route to cross over to the Willow Creek Alternative to avoid potential impacts on the cultural landscape south of the Farewell Bend area.		

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Table 2-23. Alternative Route Comparison Summary for Land Use, Agriculture, Recreation, Transportation, Lands with Wilderness Characteristics, and Potential Congressional Designations in Segment 2—Blue Mountains

Alternative Route	Land Use				Agriculture	Recreation	Transportation	Lands with Wilderness Characteristics	Potential Congressional Designations
	Land Ownership (Percent)	Percent within Utility Corridors	Total Miles of Parallel Facilities within 2,000 feet	Summary					
				in aircraft movement during training • Requires obstruction evaluation/airport airspace analysis in coordination with the FAA **Special Designated Areas** Not crossed	• Crosses 2.5 miles of grazing allotments				
Variation S2-B1	BLM: 0.8 P: 2.9	0	3.3	**Existing Land Use** • No high residual impacts • 2.0 miles of moderate residual impacts where the alternative route crosses forest/woodlands • 1 residential building within right-of-way **Zoning** No EFU zoning crossed **Military Training Lands** Not crossed **Special Designated Areas** Not crossed	**Existing Agriculture** • 0.1 mile moderate residual impacts where the alternative crosses field crops **Important Farmland, High-value Soils, and CRP Lands** • Crosses 2.9 miles of farmland of statewide importance • No high-value soils crossed **Livestock Grazing** • Crosses 0.8 mile of grazing allotments	• No high or moderate residual impacts	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present
Variation S2-B2	P: 3.8	0	3.8	**Existing Land Use** • No high residual impacts • 2.2 miles of moderate residual impacts where the alternative route crosses forest/woodlands • No residential buildings within right-of-way **Zoning** No EFU zoning crossed **Military Training Lands** Not crossed **Special Designated Areas** Not crossed	**Existing Agriculture** • No moderate or high residual impacts expected **Important Farmland, High-value Soils, and CRP Lands** • Crosses 2.9 miles of farmland of statewide importance and 0.1 miles of high-value soils **Livestock Grazing** • No grazing allotments crossed	• No high or moderate residual impacts	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present
Variation S2-C1	P: 9.3	0	9.0	**Existing Land Use** • No high residual impacts • 6.4 miles of moderate residual impacts where the alternative route crosses forest/woodlands • No residential buildings within right-of-way **Zoning** No EFU zoning crossed **Military Training Lands** Not crossed **Special Designated Areas** Not crossed	**Existing Agriculture** • 0.1 mile moderate residual impacts where the alternative crosses field crops **Important Farmland, High-value Soils, and CRP Lands** • Crosses 7.8 miles of farmland of statewide importance • No high-value soils crossed **Livestock Grazing** • Crosses 2.0 miles of grazing allotments	• No high or moderate residual impacts	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present
Variation S2-C2	P: 8.8	0	8.5	**Existing Land Use** • No high residual impacts • 6.1 miles of moderate residual impacts where the alternative route crosses forest/woodlands • No residential building within right-of-way **Zoning** No EFU zoning crossed	**Existing Agriculture** • No moderate or high residual impacts expected **Important Farmland, High-value Soils, and CRP Lands** • Crosses 6.5 miles of farmland of statewide importance • No high-value soils crossed	• 0.8 mile of moderate impacts where crossing hunting access areas • Would have the greatest indirect effects to the Morgan Lake Recreation Area	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present

Table 2-23. Alternative Route Comparison Summary for Land Use, Agriculture, Recreation, Transportation, Lands with Wilderness Characteristics, and Potential Congressional Designations in Segment 2—Blue Mountains									
Alternative Route	Land Use				Agriculture	Recreation	Transportation	Lands with Wilderness Characteristics	Potential Congressional Designations
	Land Ownership (Percent)	Percent within Utility Corridors	Total Miles of Parallel Facilities within 2,000 feet	Summary					
				Military Training Lands *Not crossed* ***Special Designated Areas*** *Not crossed*	***Livestock Grazing*** • *Crosses 2.9 miles of grazing allotments*				
Variation S2-E1	*P: 2.3*	*0*	*2.2*	***Existing Land Use*** • *No high residual impacts* • *1.6 miles of moderate residual impacts where the alternative route crosses forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed* ***Special Designated Areas*** *Not crossed*	***Existing Agriculture*** • *No moderate or high residual impacts expected* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 1.5 miles of farmland of statewide importance* • *No high-value soils crossed* ***Livestock Grazing*** • *Crosses 0.9 mile of grazing allotments*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*
Variation S2-E2	*P: 2.6*	*0*	*2.6*	***Existing Land Use*** • *No high residual impacts* • *1.4 miles of moderate residual impacts where the alternative route crosses forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed* ***Special Designated Areas*** *Not crossed*	***Existing Agriculture*** • *0.1 mile moderate residual impacts where the alternative crosses field crops* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 1.4 miles of farmland of statewide importance* • *No high-value soils crossed* ***Livestock Grazing*** • *Crosses 1.4 miles of grazing allotments*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*
Variation S2-F1	*P: 12.1*	*0*	*10.3*	***Existing Land Use*** • *No high residual impacts* • *1.2 miles of moderate residual impacts where the alternative route crosses agricultural and forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed* ***Special Designated Areas*** *Not crossed*	***Existing Agriculture*** • *0.6 mile moderate residual impacts where the alternative crosses field crops* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 2.4 miles of Prime Farmland if irrigated, 4.3 miles of farmland of statewide importance and 2.6 miles of high-value soils* ***Livestock Grazing*** • *Crosses 4.4 miles of grazing allotments*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*
Variation S2-F2	*P: 12.2*	*0*	*12.2*	***Existing Land Use*** • *No high residual impacts* • *0.2 mile of moderate residual impacts where the alternative route crosses forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed*	***Existing Agriculture*** • *0.2 mile moderate residual impacts where the alternative crosses field crops* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 1.5 miles of Prime Farmland if irrigated, 3.0 miles of farmland of statewide importance and 1.8 miles of*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*

Table 2-23. Alternative Route Comparison Summary for Land Use, Agriculture, Recreation, Transportation, Lands with Wilderness Characteristics, and Potential Congressional Designations in Segment 2—Blue Mountains

Alternative Route	Land Use				Agriculture	Recreation	Transportation	Lands with Wilderness Characteristics	Potential Congressional Designations
	Land Ownership (Percent)	Percent within Utility Corridors	Total Miles of Parallel Facilities within 2,000 feet	Summary					
				Special Designated Areas *Not crossed*	*high-value soils* ***Livestock Grazing*** • *Crosses 5.7 miles of grazing allotments*				
Glass Hill	BLM: 0.5 USFS: 1.3 P: 31.9	3.9	30.4	**Existing Land Use** • No high residual impacts • 13.4 miles of moderate residual impacts where the alternative route crosses agricultural and forest/woodlands • No residential building within right-of-way **Zoning** • Crosses 4.9 miles of EFU zoning **Military Training Lands** • Crosses 3.1 miles of special use airspace • Potential to create restrictions in aircraft movement during training • Requires obstruction evaluation/airport airspace analysis in coordination with the FAA **Special Designated Areas** Not crossed	**Existing Agriculture** • 0.6 mile moderate residual impacts where the alternative crosses field crops **Important Farmland, High-value Soils, and CRP Lands** • Crosses 2.4 miles of Prime Farmland if irrigated, 18.1 miles of farmland of statewide importance and 2.6 miles of high-value soils **Livestock Grazing** • Crosses 12.4 miles of grazing allotments	• No high or moderate residual impacts	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present
Variation S2-D1	*P: 4.3*	*0*	*2.9*	***Existing Land Use*** • *No high residual impacts* • *3.7 miles of moderate residual impacts where the alternative route crosses forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed* ***Special Designated Areas*** *Not crossed*	***Existing Agriculture*** • *No moderate or high residual impacts expected* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 3.5 miles of farmland of statewide importance* • *No high-value soils crossed* ***Livestock Grazing*** • *No grazing allotments crossed*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*
Variation S2-D2	*P: 4.1*	*0*	*3.1*	***Existing Land Use*** • *No high residual impacts* • *3.2 miles of moderate residual impacts where the alternative route crosses forest/woodlands* • *No residential building within right-of-way* ***Zoning*** *No EFU zoning crossed* ***Military Training Lands*** *Not crossed* ***Special Designated Areas*** *Not crossed*	***Existing Agriculture*** • *No moderate or high residual impacts expected* ***Important Farmland, High-value Soils, and CRP Lands*** • *Crosses 3.3 miles of farmland of statewide importance* • *No high-value soils crossed* ***Livestock Grazing*** • *No grazing allotments crossed*	• *No high or moderate residual impacts*	• *No high or moderate residual impacts*	• *No lands with wilderness characteristics present*	• *No potential congressional designations are present*
Mill Creek	USFS: 2.5 P: 31.5	7.4	33.2	**Existing Land Use** • No high residual impacts • 10.9 miles of moderate residual impacts where the alternative route crosses agricultural and	**Existing Agriculture** • 0.8 mile moderate residual impacts where the alternative crosses field crops	• 1.4 miles of moderate impacts where crossing hunting access areas	• No high or moderate residual impacts	• No lands with wilderness characteristics present	• No potential congressional designations are present

Table 2-23. Alternative Route Comparison Summary for Land Use, Agriculture, Recreation, Transportation, Lands with Wilderness Characteristics, and Potential Congressional Designations in Segment 2—Blue Mountains

Alternative Route	Land Use				Agriculture	Recreation	Transportation	Lands with Wilderness Characteristics	Potential Congressional Designations
	Land Ownership (Percent)	Percent within Utility Corridors	Total Miles of Parallel Facilities within 2,000 feet	Summary					
				forest/woodlands • No residential building within right-of-way **Zoning** • Crosses 3.0 miles of EFU zoning **Military Training Lands:** Not crossed **Special Designated Areas** • Crosses 1.0 mile of the Ladd Marsh Wildlife Area.	**Important Farmland, High-value Soils, and CRP Lands** • Crosses 1.6 miles of Prime Farmland if irrigated, 15.3 miles of farmland of statewide importance and 2.4 miles of high-value soils **Livestock Grazing** • Crosses 9.8 miles of grazing allotments				

Table Notes:
ACEC = area of critical environmental concern
APE = area of potential effects
BLM = Bureau of Land Management
CAFO = confined animal feeding operation
CRP = Conservation Reserve Program
EFU = exclusive farm use
FAA = Federal Aviation Authority
NHT = national historic trail
NWSTF = Naval Weapons Systems Training Facility
P = Private
ROS = recreation opportunity spectrum
SEORMP = Southeastern Oregon Resource Management Plan
VRM = visual resource management
WSR = Wild and Scenic River

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
Applicant's Proposed Action	**<u>Residual Impacts</u>** **Viewers** • High: 17.5 miles • Moderate: 15.5 miles **Scenic Quality and Landscape Character** • 10 VAUs affected − 6 Foreground − 10 Middleground • 1 VAU with Class A within foreground would experience a high degree of impacts. This would lower the score but would not change the rating. 1 VAU with Class B (BA-014 Blue and Wallowa Foothills) would experience a high degree of impacts within the foreground and would change the rating from Class B to Class C **Sensitive Viewing Platforms** • Residences: High impacts be experienced by residences near Morgan Lake and KOP 4-55 (Elk Song Ranch), along Glass Hill Road as well as residences adjacent to I-84 and Heber Road • Recreation: KOP 4-40 (Spring Creek USFS Campground) could experience a moderate degree of impacts due to the project being partially obstructed and partially skylined from a distance of approximately 0.3 mile • The Grande Tour Route and the Grande Tour Scenic Bikeway would both be crossed experiencing a moderate degree of impacts • Travel Routes: High impacts would be experienced by I-84; Moderate impacts would be experienced by USFS Road 21, State Highway 244 and USFS Road 43—Ladd Canyon Road **Federal Land Conformance** • Non-conformance within the USFS-administered lands through the BA-011 Blue Mountains Forest VAU with VQOs established in the Wallowa-Whitman National Forest LRMP	**Inventory** • 103 previously recorded sites in the study corridor • 8 previously recorded sites in the direct effects APE • Key resources include the Mount Emily Lumber Company Railroad, the Hilgard Cemetery, and Oregon NHT-associated sites. Of these resources, the Mount Emily Lumber Company Railroad is in the direct effects APE, and also is crossed by this alternative route • Crosses one unrecorded (unknown condition) of the Oregon NHT (refer to map MV-25 for inventory data) • There are sites or areas of Native American concern along this alternative route • There is the potential for direct effects on undocumented, significant sites in the Glass Hill area • Based on RLS cultural data collected for alternative routes in the vicinity of North Powder and La Grande, resources that potentially could be affected visually include residential and commercial buildings, waterworks, and historic transportation corridors **Impacts** • 1.8 miles of high cultural resource sensitivity. Additional miles of high cultural resource sensitivity would be anticipated due to one unrecorded segment of the Oregon NHT along this alternative route • 11.4 miles of moderate cultural resource sensitivity • 16.5 miles of low cultural resource sensitivity • 4.1 miles of no cultural resource sensitivity	• Native American tribes have expressed concern about potential direct and indirect effects on the following resources: − Archaeological resources (e.g., lithic scatters, lithic and tool scatters, cairns, rock alignments, one habitation site). Most of these sites are in the indirect effects APE − The Oregon NHT (path of the Forced March of 1879) is in the direct effects APE − One historic property of religious and cultural significance to an Indian tribe has been identified along one of the route variations (Variation S2-B2) considered for the Applicant's Proposed Action Alternative (indirect effects APE) − Traditional foods • There is the potential for direct effects on undocumented, significant sites of potential tribal significance in the Glass Hill area • Ongoing coordination and consultation with Native American sovereign tribal governments may identify additional resources of concern	**<u>Oregon NHT</u>** **Residual Impacts** • High: 9.7 miles • Moderate: 11.4 miles • Low: 12.7 miles **Trail Management** • High impacts on views from the NPS Auto Tour Route • Moderate impacts on views from Blue Mountains High Potential Route Segment • Moderate impacts on views from Hilgard Junction High Potential Historic Segment **Scenic and Recreation Resources** • Moderate impacts on views from Hilgard Junction State Park **Historic and Cultural Resources** • No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments • High impact on views from Oregon Trail Monument and Stone Marker south of Hilgard trail-associated cultural sites. Moderate impacts on views from Emily Doone Grave 1868, Trading Post Site, Pioneer Grave Sites, Pioneer Campsite, D. Dodge 1885 Inscription, Stage Station, and Clover Creek Station trail-associated cultural sites **Biological, Natural, and Other Resources** • No key issues identified	• Minimal and temporary impact on employment and population • Minimal agricultural impacts with yield losses valued at $13,178 annually during construction and $4,198 in residual yield losses during operations • No identifiable impacts on CAFO operations • Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to approximately 9 AUMs with residual forage losses of 3 AUMs each year of operation • Moderate impacts on timber resources: the B2H Project could disturb 279 acres of timberlands during construction with residual disturbances equal to 89 acres of timberlands • Impacts on property values are minimal and short-term in nature • No disproportionate impact on environmental justice population
Variation S2-A1	***<u>Residual Impacts</u>*** ***Viewers*** • *High: 2.5 miles* • *Moderate: 0.3 mile* ***Scenic Quality and Landscape Character*** • *5 VAUs affected* − *3 Foreground* − *5 Middleground* • *Lands associated with Class B scenic quality would experience high impacts* ***Sensitive Viewing Platforms*** • *Residences: No key issues identified* • *Recreation: KOPs 4-40 and 4-19 would have*	***Inventory*** • *47 previously recorded sites in the study corridor* • *1 previously recorded site in the direct effects APE* • *Key resources include the Hilgard Junction, the Hilgard Cemetery, and the Mount Emily Lumber Company; these resources are in the indirect effects APE* • *An additional key resource is the Oregon NHT (unrecorded segments of unknown condition); this linear site is in the indirect effects APE (refer to map MV-25 for inventory data)* • *There are sites of Native American concern*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: 2.4 miles* • *Moderate: 0.4 mile* • *Low: none* ***Trail Management*** • *High impacts on views from the NPS Auto Tour Route* • *Moderate impacts on views from Blue Mountains High Potential Route Segment* • *Moderate impacts on views from Hilgard Junction High Potential Historic Segment*	• *Minimal and temporary impact on employment and population* • *No agricultural impacts* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to nearly 3 AUMs with residual forage losses of less than 1 AUM each year of operation* • *Minimal impacts on timber resources: the B2H Project could disturb 32 acres of timberlands during construction with residual disturbances equal to roughly 11 acres of timberlands* • *Impacts on property values are minimal and*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	the same moderate impacts • Travel Routes: High impacts would be experienced by USFS Road 21; Moderate impacts would be experienced by I-84 **Federal Land Conformance** • Non-conformance within the USFS-administered lands through the BA-011 Blue Mountains Forest VAU	along this route variation **Impacts** • 0 miles of high cultural resource sensitivity • 1.8 miles of moderate cultural resource sensitivity • 1.0 mile of low cultural resource sensitivity • 0 miles of no cultural resource sensitivity		**Scenic and Recreation Resources** • Moderate impacts on views from Hilgard Junction State Park **Historic and Cultural Resources** • No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments **Biological, Natural, and Other Resources** • No key issues identified	short-term in nature • No disproportionate impact on environmental justice population
Variation S2-A2	***Residual Impacts*** **Viewers** • High: 0.8 mile • Moderate: 1.9 miles **Scenic Quality and Landscape Character** • 5 VAUs affected – 3 Foreground – 5 Middleground • Impacts would be less than S1-A1 due to its colocation with the 230-kV transmission line **Sensitive Viewing Platforms** • Residences: No key issues identified • Recreation: KOPs 4-40 and 4-19 would have the same moderate impacts • Travel Routes: High impacts would be experienced by USFS Road 21; Moderate impacts would be experienced by I-84 **Federal Land Conformance** • Non-conformance within the USFS-administered lands through the BA-011 Blue Mountains Forest VAU; Non-conformance in Partial Retention VQO and Modification VQO	**Inventory** • 47 previously recorded sites in the study corridor • There are no previously recorded sites in the direct effects APE • Same key resources as Variation S2-A1 because these route variations follow similar alignments, passing in proximity to the same resources • Variation S2-A2 is located farther from unrecorded segments of the Oregon NHT (refer to map MV-25 for inventory data) • There are sites of Native American concern along this route variation • Potential for direct effects on undocumented, historic transportation corridors along this route variation **Impacts** • 0 miles of high cultural resource sensitivity • 1.5 miles of moderate cultural resource sensitivity • 1.4 miles of low cultural resource sensitivity • 0 miles of no cultural resource sensitivity	• Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative	***Oregon NHT*** **Residual Impacts:** • High: 0.1 mile • Moderate: 2.8 miles • Low: none **Trail Management:** • Moderate impacts on views from Blue Mountains High Potential Route Segment • Moderate impacts on views from Hilgard Junction High Potential Historic Segment • Moderate impacts on views from the NPS Auto Tour Route **Scenic and Recreation Resources:** • Moderate impacts on views from Hilgard Junction State Park **Historic and Cultural Resources:** • No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments **Biological, Natural, and Other Resources:** • No key issues identified	• Minimal and temporary impact on employment and population • No agricultural impacts • No identifiable impacts on CAFO operations • Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to approximately 6 AUMs with residual forage losses of less than 2 AUMs each year of operation • Minimal impacts on timber resources: the B2H Project could disturb 39 acres of timberlands during construction with residual disturbances equal to roughly 12 acres of timberlands • Impacts on property values are minimal and short-term in nature • No disproportionate impact on environmental justice population
Variation S2-B1	***Residual Impacts*** **Viewers** • High: 1.1 miles • Moderate: 2.3 mile **Scenic Quality and Landscape Character** • 3 VAUs affected – 1 Foreground – 3 Middleground • Forested and mostly undeveloped lands associated with Class B scenic quality that are crossed would experience high impacts **Sensitive Viewing Platforms:** • Residences: No key issues identified • Recreation: No key issues identified • Travel Routes: Moderate impacts would be	**Inventory** • 26 previously recorded sites in the study corridor • 2 previously recorded sites in the direct effects APE • Key resources include one pioneer grave site, the Oregon NHT (contributing segment), and trail-associated sites; these resources are in the indirect effects APE • Potential for direct effects on undocumented, mining-related sites • There are sites of Native American concern along this route variation • Based on RLS cultural data collected for alternative routes in the vicinity of La Grande, historic resources that potentially could be	• Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative	***Oregon NHT*** **Residual Impacts** • High: 2.2 miles • Moderate: 1.5 miles • Low: none **Trail Management** • Moderate impacts on views from Blue Mountains High Potential Route Segment • Moderate impacts on views from Hilgard Junction High Potential Historic Segment • Moderate impacts on views from the NPS Auto Tour Route **Scenic and Recreation Resources** • Moderate impacts on views from	• Minimal and temporary impact on employment and population • Minimal agricultural impacts with yield losses valued at $1,480 annually during construction and $485 residual yield losses during operations • No identifiable impacts on CAFO operations • Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses of less than 1 AUM each year of operation • Minimal impacts on timber resources: the B2H Project could disturb 43 acres of timberlands during construction with residual disturbances equal to roughly 15 acres of timberlands • Impacts on property values are minimal and

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	experienced by U.S. Forest Service Road 21 and State Highway 244 ***Federal Land Conformance:*** • *No key issues identified*	*affected visually include residential and commercial buildings, waterworks, and historic transportation corridors* ***Impacts*** • *0.4 mile of high cultural resource sensitivity* • *3.3 miles of moderate cultural resource sensitivity* • *0 miles of low cultural resource sensitivity* • *0 miles of no cultural resource sensitivity*		*Hilgard Junction State Park* ***Historic and Cultural Resources*** • *High impacts on views from the Oregon Trail Monument and Stone Marker south of Hilgard trail-associated cultural site. Moderate impacts on views from Emily Doone Grave 1868 trail-associated cultural site* • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* ***Biological, Natural, and Other Resources*** • *No key issues identified*	*short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-B2	***<u>Residual Impacts</u>*** ***Viewers*** • *High: 0.8 mile* • *Moderate: 1.8 miles* ***Scenic Quality and Landscape Character*** • *4 VAUs affected* – *2 Foreground* – *4 Middleground* • *Forested and mostly undeveloped lands associated with Class B scenic quality that are crossed would experience high impacts* ***Sensitive Viewing Platforms*** • *Residences: 1 residence would be found within 0.5 mile from the alignment higher impacts than S2-B1* • *Recreation: No key issues identified* • *Travel Routes: Moderate impacts would be experienced by U.S. Forest Service Road 21 and State Highway 244* ***Federal Land Conformance*** • *No key issues identified*	***Inventory*** • *27 previously recorded sites in the study corridor* • *1 previously recorded site in the direct effects APE* • *Key resources include one pioneer grave site, one contributing segment of the Oregon NHT, trail-associated sites, and one site of Native American concern (*historic property of religious and cultural significance to an Indian tribe*); these resources are in the indirect effects APE* • *Variation S2-B2 is closer to the Oregon NHT than Variation S2-B1 (indirect effects APE)* • *There are sites of Native American concern along this route variation* • *Based on RLS cultural data collected for alternative routes in the vicinity of La Grande, historic resources that potentially could be affected visually are the same as those identified along Variation S2-B1. Resources are the same because they occur near an area where the route variations intersect (east/northeast of Sheep Creek)* ***Impacts*** • *0 miles of high and low cultural resource sensitivity* • *3.8 miles of moderate cultural resource sensitivity* • *0 miles of no cultural resource sensitivity*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: 0.7 mile* • *Moderate: 3.1 miles* • *Low: none* ***Trail Management*** • *Moderate impacts on views from Blue Mountains High Potential Route Segment* • *Moderate impacts on views from Hilgard Junction High Potential Historic Segment* • *Moderate impacts on views from the NPS Auto Tour Route* ***Scenic and Recreation Resources*** • *Moderate impacts on views from Hilgard Junction State Park* ***Historic and Cultural Resources*** • *High impacts on views from the Oregon Trail Monument and Stone Marker south of Hilgard trail-associated cultural site. Moderate impacts on views from Emily Doone Grave 1868 trail-associated cultural site* • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *Minimal and temporary impact on employment and population* • *No agricultural impacts* • *No identifiable impacts on CAFO operations* • *No identifiable impacts on grazing resources* • *Minimal impacts on timber resources: the B2H Project could disturb 44 acres of timberlands during construction with residual disturbances equal to roughly 17 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-C1	***<u>Residual Impacts</u>*** ***Viewers*** • *High: 1.9 miles* • *Moderate: 7.4 miles*	***Inventory*** • *19 previously recorded sites in the study corridor* • *There are no previously recorded sites in the direct effects APE*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: none* • *Moderate: 2.4 miles* • *Low: 6.9 miles*	• *Minimal and temporary impact on employment and population* • *Minimal agricultural impacts with yield losses during construction valued at $1,538 and $543 in residual yield losses during operations*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	Scenic Quality and Landscape Character • *4 VAUs affected* – *2 Foreground* – *4 Middleground* • *Mostly undeveloped lands varying from dense forest to grasslands that are associated with Class B scenic quality that are crossed would experience high to moderate impacts* ***Sensitive Viewing Platforms*** • *Residences: 2 residences; 1 near Morgan Lake Road and 1 Near Glass Hill Road would experience skylined mostly unimpeded views of the project experiencing high impacts* • *Recreation: No key issues identified* • *Travel Routes: No key issues identified* ***Federal Land Conformance*** • *No key issues identified*	• *Key resources include pioneer grave sites, the Oregon NHT (unrecorded, intact segment), and trail-associated sites (refer to map MV-25 for inventory data); these resources are located in the indirect effects APE* • *Potential for direct effects on undocumented, mining-related sites* • *There are sites of Native American concern along this route variation* • *Based on RLS cultural data collected for alternative routes in the vicinity of La Grande, historic resources that potentially could be affected visually, include residential and commercial buildings, waterworks, and historic transportation corridors* ***Impacts*** • *0 miles of high cultural resource sensitivity* • *1.9 miles of moderate cultural resource sensitivity* • *3.3 miles of low cultural resource sensitivity* • *4.1 miles of no cultural resource sensitivity*	*Action Alternative*	***Trail Management*** • *Moderate impacts on views from Blue Mountains High Potential Route Segment* • *Moderate impacts on views from Hilgard Junction High Potential Historic Segment* • *Moderate impacts on views from the NPS Auto Tour Route* ***Scenic and Recreation Resources*** • *Moderate impacts on views from Hilgard Junction State Park* ***Historic and Cultural Resources*** • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* • *Moderate impacts on views from Emily Doone Grave 1868, Trading Post Site, Pioneer Grave Sites, Pioneer Campsite, and Stage Station trail-associated cultural site* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses of less than 1 AUM each year of operation* • *Moderate impacts on timber resources: the B2H Project could disturb 129 acres of timberlands during construction with residual disturbances equal to roughly 42 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-C2	***<u>Residual Impacts</u>*** ***Viewers*** • *High: 6.1 miles* • *Moderate: 2.7 miles* ***Scenic Quality and Landscape Character*** • *11 VAUs affected* – *7 Foreground* – *11 Middleground* • *Mostly undeveloped lands varying from dense forest to grasslands that are associated with Class B scenic quality that are crossed would experience high to moderate impacts* ***Sensitive Viewing Platforms*** • *Residences: Several residences including KOP 4-55 (Elk Song Ranch) would have their views of the alignment partially to filly obstructed by tall evergreen vegetation* • *Recreation: High impacts on KOP 4-28 (Morgan Lake)* • *Travel Routes: No key issues identified* ***Federal Land Conformance*** • *No key issues identified*	***Inventory*** • *25 previously recorded sites in the study corridor* • *1 previously recorded site in the direct effects APE* • *Same key resources as Variation S2-C1 because they occur near the areas where the route variations become closer to one another or intersect* • *Variation S2-C2 is closer to the Oregon NHT (unrecorded, intact segment) and trail-associated sites than Variation S2-C1; the trail is in the indirect effects APE (refer to map MV-25 for inventory data])* • *There are sites of Native American concern along this route variation* • *Potential for direct effects on undocumented, significant sites in the Ladd Marsh Wildlife Area, along with the potential for undocumented, mining-related sites south of Morgan Lake* • *Based on RLS cultural data collected for alternative routes in the vicinity of La Grande, resources that potentially could be affected visually are the same as those identified along Variation S2-C1. Resources are the same because they occur near an area where the route variations intersect (west/northwest of Morgan Lake)*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: none* • *Moderate: 3.4 miles* • *Low: 5.4 miles* ***Trail Management*** • *Moderate impacts on views from Blue Mountains High Potential Route Segment* • *Moderate impacts on views from Hilgard Junction High Potential Historic Segment* • *Moderate impacts on views from the NPS Auto Tour Route* ***Scenic and Recreation Resources*** • *Moderate impacts on views from Hilgard Junction State Park* ***Historic and Cultural Resources*** • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* • *Moderate impacts on views from Emily Doone Grave 1868, Trading Post Site, Pioneer Grave Sites, Pioneer Campsite, and Stage Station trail-associated cultural site* ***Biological, Natural, and Other***	• *Minimal and temporary impact on employment and population* • *Minimal agricultural impacts with yield losses during construction valued at $1,432 and $409 residual yield losses during operations* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses of less than 1 AUM each year of operation* • *Moderate impacts on timber resources: the B2H Project could disturb 126 acres of timberlands during construction with residual disturbances equal to roughly 40 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
		Impacts • *0 miles of high cultural resource sensitivity* • *3.0 miles of moderate cultural resource sensitivity* • *5.7 miles of low cultural resource sensitivity* • *0.2 mile of no cultural resource sensitivity*		***Resources*** • *No key issues identified*	
Variation S2-E1	***Residual Impacts*** ***Viewers*** • *High: 1.7 miles* • *Moderate: 0.6 mile* ***Scenic Quality and Landscape Character*** • *4 VAUs affected* – *2 Foreground* – *4 Middleground* • *Mostly undeveloped lands varying from dense forest to grasslands that are associated with Class B scenic quality that are crossed would experience high to moderate impacts* ***Sensitive Viewing Platforms*** • *Residences: No key issues identified* • *Recreation: No key issues identified* • *Travel Routes: Moderate impacts would be experienced by I-84 due to the existing 230-kV* ***Federal Land Conformance*** • *No key issues identified*	***Inventory*** • *6 previously recorded sites in the study corridor* • *There are no previously recorded sites in the direct effects APE* • *A key resource is the Oregon NHT (unrecorded segments); the trail is in the indirect effects APE (refer to map MV-25 for inventory data)* • *There is an extensive pre-contact lithic procurement area/homestead in the indirect effects APE* • *There are sites of Native American concern along this route variation* • *Potential for direct effects on undocumented, trail-associated sites* ***Impacts*** • *0 miles of high and moderate cultural resource sensitivity* • *2.3 miles of low cultural resource sensitivity* • *0 miles of no cultural resource sensitivity*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***Oregon NHT*** ***Residual Impacts*** • *High: 0.9 mile* • *Moderate: 1.4 miles* • *Low: none* ***Trail Management*** • *High impacts on views from the NPS Auto Tour Route* ***Scenic and Recreation Resources*** • *No key issues identified* ***Historic and Cultural Resources*** • *Moderate impacts on views from D. Dodge 1885 Inscription and Possible Pioneer Graves trail-associated cultural site* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *Minimal and temporary impact on employment and population* • *No agricultural impacts* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses equivalent to 0 AUM each year of operation* • *Minimal impacts on timber resources: the B2H Project could disturb 31 acres of timberlands during construction with residual disturbances equal to roughly 10 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-E2	***Residual Impacts*** ***Viewers*** • *High: 1.8 miles* • *Moderate: 0.8 mile* ***Scenic Quality and Landscape Character*** • *4 VAUs affected* – *2 Foreground* – *4 Middleground* • *Mostly undeveloped lands varying from dense forest to grasslands that are associated with Class B scenic quality that are crossed would experience less impacts when compared to impacts from S2-E1 due to the 230-kV transmission line and less undeveloped land being crossed.* ***Sensitive Viewing Platforms*** • *Residences: 1 residence would have partially skylined views of the B2H Project* • *Recreation: No key issues identified* • *Travel Routes: less impacts would be experienced by I-84 due to the distance compared to S2-E1* ***Federal Land Conformance*** • *No key issues identified*	***Inventory*** • *7 previously recorded sites in the study corridor* • *1 previously recorded site in the direct effects APE* • *Same key resource as Variation S2-E1. Although these route variations do not share similar alignments, resources are the same because they occur in the areas where the route variations become closer to one another* • *Variation S2-E2 is closer to unrecorded segments of the Oregon NHT (including intact segment) than Variation S2-E1; the trail is in the indirect effects APE (refer to map MV-25 for inventory data)* • *There is an extensive pre-contact lithic procurement area/homestead in the direct effects APE* • *There are sites of Native American concern along this route variation* • *There is the potential for direct effects on undocumented, trail-associated sites along this route variation* ***Impacts*** • *0.0 miles of high cultural resource sensitivity* • *1.1 miles of moderate cultural resource*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***Oregon NHT*** ***Residual Impacts*** • *High: 1.4 miles* • *Moderate: 1.2 miles* • *Low: none* ***Trail Management*** • *High impacts on views from the NPS Auto Tour Route* ***Scenic and Recreation Resources*** • *No key issues identified* ***Historic and Cultural Resources*** • *No direct impacts on contributing trail segments, high impacts on views from contributing trail segments* • *Moderate impacts on views from D. Dodge 1885 Inscription and Possible Pioneer Graves trail-associated cultural site* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *Minimal and temporary impact on employment and population* • *Minimal agricultural impacts with yield losses valued at $1,448 annually during construction and residual yield losses of $452 each year of operation* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses equivalent to 0 AUM each year of operation* • *Minimal impacts on timber resources: the B2H Project could disturb 30 acres of timberlands during construction with residual disturbances equal to approximately 12 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
		sensitivity • 1.5 miles of low cultural resource sensitivity • 0.0 miles of no cultural resource sensitivity			
Variation S2-F1	***Residual Impacts*** **Viewers** • *High: 7.2 miles* • *Moderate: 4.4 miles* **Scenic Quality and Landscape Character** • *6 VAUs affected* – *4 Foreground* – *6 Middleground* • *Rolling sage steppe-covered hills that are associated with Class B and Class C scenic quality that are crossed would experience moderate to high impacts* **Sensitive Viewing Platforms** • *Residences: No key issues identified* • *Recreation: No key issues identified* • *Travel Routes: Moderate impacts would be experienced by U.S. Forest Service Road 21 and State Highway 244* **Federal Land Conformance** • *No key issues identified*	**Inventory** • *32 previously recorded sites in the study corridor* • *2 previously recorded sites in the direct effects APE* • *Key resources include the Clover Creek Station of the Oregon NHT and unrecorded segment (unknown condition) of the Oregon NHT (refer to map MV-25 for inventory data). Of these resources, only the Oregon NHT is in the direct effect APE, and also is crossed by this route variation* • *There are sites of Native American concern along this route variation* • *Based on RLS cultural data collected for alternative routes in the vicinity of North Powder, resources that potentially could be affected visually include buildings, waterworks, and historic transportation corridors* **Impacts** • *1.0 mile of high cultural resource sensitivity. Additional miles of high cultural resource sensitivity would be anticipated due to one unrecorded segment of the Oregon NHT along this route variation* • *3.4 miles of moderate cultural resource sensitivity* • *7.7 miles of low cultural resource sensitivity* • *0 miles of no cultural resource sensitivity*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***Oregon NHT*** **Residual Impacts** • *High: 4.0 miles* • *Moderate: 2.4 miles* • *Low: 5.7 miles* **Trail Management** • *High impacts on views from the NPS Auto Tour Route* **Scenic and Recreation Resources** • *No key issues identified* **Historic and Cultural Resources** • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* • *Moderate impacts on views from D. Dodge 1885 Inscription, Possible Pioneer Graves, and Clover Creek Station trail-associated cultural site* **Biological, Natural, and Other Resources** • *No key issues identified*	• *Minimal and temporary impact on employment and population* • *Minimal agricultural impacts with yield losses valued at $8,338 annually during construction and residual yield losses of $2,366 each year of operation* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses of less than 1 AUM each year of operation* • *Minimal impacts on timber resources: the B2H Project could disturb 14 acres of timberlands during construction with residual disturbances equal to approximately 5 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-F2	***Residual Impacts*** **Viewers** • *High: 1.3 mile* • *Moderate: 6.3 miles* **Scenic Quality and Landscape Character** • *6 VAUs affected* – *4 Foreground* – *6 Middleground* • *Rolling sage steppe-covered hills that are associated with Class B and Class C scenic quality that are crossed would experience moderate to high impacts and is collocated with an existing 230-kV transmission line* **Sensitive Viewing Platforms** • *Residences: Impacts associated with residences for this route variation would be associated with the residence near I-84 and Heber Road, and the residence along Jimmy Creek Road experiencing high impacts* • *Recreation: No key issues identified*	**Inventory** • *43 previously recorded sites in the study corridor* • *There are no previously recorded sites in the direct effects APE* • *Same key resources as Variation S2-F2, since these route variations follow similar alignments, passing in proximity to the same resources (primarily in the vicinity of Jimmy Creek)* • *Crosses one unrecorded segment (unknown condition) of the Oregon NHT (refer to map MV-25 for inventory data)* • *There are sites of Native American concern along this route variation* • *Based on RLS cultural data collected for alternative routes in the vicinity of North Powder, resources that potentially could be affected visually along this route variation are the same as those identified along Variation S2-F1. Resources are the same because they occur near an area where the route variations are in proximity to one another. Variation S2-*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Applicant's Proposed Action Alternative*	***Oregon NHT*** **Residual Impacts** • *High: 1.8 miles* • *Moderate: 3.9 miles* • *Low: 6.5 miles* **Trail Management** • *High impacts on views from the NPS Auto Tour Route* **Scenic and Recreation Resources** • *No key issues identified* **Historic and Cultural Resources** • *No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments* • *Moderate impacts on views from D. Dodge 1885 Inscription, Possible Pioneer Graves, and Clover Creek Station trail-associated cultural site* **Biological, Natural, and Other Resources**	• *Minimal and temporary impact on employment and population* • *Minimal agricultural impacts with yield losses valued at $2,818 annually during construction and residual yield losses of $827 each year of operation* • *No identifiable impacts on CAFO operations* • *Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to less than 1 AUM with residual forage losses of less than 1 AUM each year of operation* • *Minimal impacts on timber resources: the B2H Project could disturb 5 acres of timberlands during construction with residual disturbances equal to less than 2 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	• *Travel Routes: Moderate impacts would be experienced by U.S. Forest Service Road 21 and State Highway 244* ***Federal Land Conformance*** *No key issues identified*	*F2 lies slightly farther from* North Powder ***Impacts*** • *0 miles of high cultural resource sensitivity. Miles of high cultural resource sensitivity would be anticipated due to one unrecorded segment of the Oregon NHT along this route variation* • *3.5 miles of moderate cultural resource sensitivity* • *8.7 miles of low cultural resource sensitivity* • *0 miles of no cultural resource sensitivity*		• *No key issues identified*	
Glass Hill	**<u>Residual Impacts</u>** **Viewers** • High: 15.7 miles • Moderate: 12.4 miles **Scenic Quality and Landscape Character** • 7 VAUs affected − 5 Foreground − 7 Middleground • Lands associated with Class B scenic quality that are crossed would experience high impacts **Sensitive Viewing Platforms** • Residences: High impacts would be experienced by residences near Morgan Lake and, along Glass Hill Road as well as residences adjacent to I-84 and Heber Road • Recreation: KOP 4-40 (Spring Creek USFS Campground) could experience a moderate degree of impacts due to the project being partially obstructed and partially skylined from a distance of approximately 0.3 mile • The Grande Tour Route and the Grande Tour Scenic Bikeway would both be crossed experiencing a moderate degree of impacts • Travel Routes: High impacts would be experienced by I-84; Moderate impacts would be experienced by USFS Road 21, State Highway 244 and USFS Road 43—Ladd Canyon Road **Federal Land Conformance** • Non-conformance within the USFS-administered lands through the BA-011 Blue Mountains Forest VAU with VQOs established in the Wallowa-Whitman National Forest LRMP	**Inventory** • 95 previously recorded sites in the study corridor • 8 previously recorded sites in the direct effects APE • Same key resources as the Applicant's Proposed Action Alternative, since these two alternative routes are identical over the majority of their length (except where the B2H Project would be located southwest of La Grande) • Crosses the Mount Emily Lumber Company Railroad and one unrecorded segment (unknown condition) of the Oregon NHT (refer to map MV-25 for inventory data) • There are sites or areas of Native American concern along this alternative route • Potential for direct effects on undocumented, significant sites in the Glass Hill area • Based on RLS cultural data collected for alternative routes in the vicinity of North Powder and La Grande, resources that potentially could be affected visually are similar those identified along the Applicant's Proposed Action Alternative, since these two alternative routes are identical over the majority of their length (except where the B2H Project would be located southwest of La Grande). The Glass Hill Alternative is farther from North Powder and La Grande **Impacts** • 2.1 miles of high cultural resource sensitivity. Miles of high cultural resource sensitivity would be anticipated due to one unrecorded segment of the Oregon NHT along this route variation • 9.1 miles of moderate cultural resource sensitivity • 17.2 miles of low cultural resource sensitivity • 5.3 miles of no cultural resource sensitivity	• Similar previously recorded sites of tribal significance as the Applicant's Proposed Action Alternative, except for 6 additional pre-contact sites along the Applicant's Proposed Action Alternative. Sites identified along these two alternative routes are similar because they occur in the areas where the alignments are shared. Sites are in the indirect effects APE, except for 1 cairn and the Oregon NHT (path of the Forced March of 1879) • Potential for direct effects on undocumented, significant sites of potential tribal significance in the Glass Hill area • Ongoing coordination and consultation with Native American sovereign tribal governments may identify additional resources of concern	**<u>Oregon NHT</u>** **Residual Impacts** • High: 9.6 miles • Moderate: 9.2 miles • Low: 14.9 miles **Trail Management** • Moderate impacts on views from Blue Mountains High Potential Route Segment • Moderate impacts on views from Hilgard Junction High Potential Historic Segment • High impacts on views from the NPS Auto Tour Route **Scenic and Recreation Resources** • Moderate impacts on views from Hilgard Junction State Park **Historic and Cultural Resources** • No direct impacts on contributing trail segments, moderate impacts on views from contributing trail segments • High impact on views from Oregon Trail Monument and Stone Marker south of Hilgard trail-associated cultural sites. Moderate impacts on views from Trading Post Site, Pioneer Grave Sites, Pioneer Campsite, D. Dodge 1885 Inscription, Stage Station, and Clover Creek Station trail-associated cultural sites **Biological, Natural, and Other Resources** • No key issues identified	• Minimal and temporary impact on employment and population • Minimal agricultural impacts with yield losses valued at $10,120 annually during construction and residual yield losses of $3,131 each year of operation • No identifiable impacts on CAFO operations • Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to 10 AUMs with residual forage losses of 3 AUMs each year of operation • Moderate impacts on timber resources: the B2H Project could disturb approximately 236 acres of timberlands during construction with residual disturbances equal to 61 acres of timberlands • Impacts on property values are minimal and short-term in nature • No disproportionate impact on environmental justice population
Variation S2-D1	***<u>Residual Impacts</u>*** ***Viewers*** • *High: none*	***Inventory*** • *There are no previously recorded sites along this route variation*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route.*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: none* • *Moderate: none*	• *Minimal and temporary impact on employment and population* • *No agricultural impacts* • *No identifiable impacts on CAFO operations*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	• *Moderate: 2.3 miles* ***Scenic Quality and Landscape Character*** • *4 VAUs affected* – *1 Foreground* – *4 Middleground* • *Lands associated with Class B scenic quality that are crossed would experience high impacts* ***Sensitive Viewing Platforms*** • *Residences: No key issues identified* • *Recreation: No key issues identified* • *Travel Routes: No key issues identified* ***Federal Land Conformance*** • *No key issues identified*	***Impacts*** • *There is no evidence of cultural resource sensitivity along Variation S2-D1, as no previously recorded sites have been identified along this route variation*	*Refer to the Glass Hill Alternative*	• *Low: 4.3 miles* ***Trail Management*** • *No key issues identified* ***Scenic and Recreation Resources*** • *No key issues identified* ***Historic and Cultural Resources*** • *No key issues identified* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *No identifiable impacts on grazing resources* • *Minimal impacts on timber resources: the B2H Project could disturb approximately 63 acres of timberlands during construction with residual disturbances equal to 21 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Variation S2-D2	***<u>Residual Impacts</u>*** ***Viewers*** • *High: none* • *Moderate: 1.5 miles* ***Scenic Quality and Landscape Character*** • *4 VAUs affected* – *1 Foreground* – *4 Middleground* • *Lands associated with Class B scenic quality that are crossed would experience high impacts* ***Sensitive Viewing Platforms*** • *Residences: No key issues identified* • *Recreation: No key issues identified* • *Travel Routes: No key issues identified* ***Federal Land Conformance*** • *No key issues identified*	***Inventory*** • *There are no previously recorded sites along this route variation* ***Impacts*** • *There is no evidence of cultural resource sensitivity along Variation S2-D2, as no previously recorded sites have been identified along this route variation*	• *Due to the nature of available data, resources of Native American concern only are discussed by alternative route. Refer to the Glass Hill Alternative*	***<u>Oregon NHT</u>*** ***Residual Impacts*** • *High: none* • *Moderate: none* • *Low: 4.1 miles* ***Trail Management*** • *No key issues identified* ***Scenic and Recreation Resources*** • *No key issues identified* ***Historic and Cultural Resources*** • *No key issues identified* ***Biological, Natural, and Other Resources*** • *No key issues identified*	• *Minimal and temporary impact on employment and population* • *No agricultural impacts* • *No identifiable impacts on CAFO operations* • *No identifiable impacts on grazing resources* • *Minimal impacts on timber resources: the B2H Project could disturb approximately 63 acres of timberlands during construction with residual disturbances equal to 19 acres of timberlands* • *Impacts on property values are minimal and short-term in nature* • *No disproportionate impact on environmental justice population*
Mill Creek	**<u>Residual Impacts</u>** **Viewers** • High: 12.4 miles • Moderate: 15.9 miles **Scenic Quality and Landscape Character** • 7 VAUs affected – 6 Foreground – 7 Middleground • Affects to the landscape would be similar however impacts would be less due to the collocation of the existing 230-kV transmission line. Lands associated with Class B scenic quality that are crossed would experience high impacts VAU BA-014 Blue and Wallowa Foothills would result in a score drop in scenic quality that would result in the VAU changing from Class B to Class C **Sensitive Viewing Platforms** • Residences: Highest impacts on residents of segment 2 alternatives. Views from the residences in the Rock Creek Canyon area	**Inventory** • 128 previously recorded sites in the study corridor • 5 previously recorded sites in the direct effects APE • Key resources include pioneer graves, the Hilgard Cemetery, the Mount Emily Lumber Company Railroad, and one NRHP-listed property (Administrative Building, Eastern Oregon State College [La Grande]). Of these resources, the Mount Emily Lumber Company Railroad is in the direct effects APE, and also is crossed by this alternative route • Crosses one unrecorded segment of the Oregon NHT (unknown condition) (refer to map MV-25 for inventory data) • There are sites or areas of Native American concern along this alternative route • There is the potential for direct effects on undocumented, significant sites in the Ladd Marsh Wildlife Area	• Similar previously recorded sites of tribal significance as the Applicant's Proposed Action Alternative, except for 15 additional sites along the Mill Creek Alternative (including one historic property of religious and cultural significance to an Indian tribe [traditional fishery/campsite]). Although the alternative routes do not follow similar alignments, most of the sites occur in the areas where the alignments become closer to one another or intersect. Most of the sites are in the indirect effects APE • The Oregon NHT (path of the Forced March of 1879) is in the direct effects APE • The Mill Creek Alternative is closer to the historic property of religious and cultural significance to an	**<u>Oregon NHT</u>** **Residual Impacts** • High: 9.5 miles • Moderate: 18.0 miles • Low: 6.5 miles **Trail Management** • High impacts on views from Blue Mountains High Potential Route Segment and moderate impacts on views from the Ladd Canyon High Potential Route Segment • High impacts on views from the NPS Auto Tour Route • Moderate impacts on views from Hilgard Junction High Potential Historic Segment **Scenic and Recreation Resources** • Moderate impacts on views from Hilgard Junction State Park **Historic and Cultural Resources**	• Minimal and temporary impact on employment and population • Minimal agricultural impacts with yield losses valued at $14,994 annually during construction and residual yield losses of $4,933 each year of operation • No identifiable impacts on CAFO operations • Minimal impacts on grazing resources: estimated forage losses during construction are equivalent to approximately 10 AUMs with residual forage losses of approximately 3 AUMs each year of operation • Moderate impacts on timber resources: the B2H Project could disturb approximately 193 acres of timberlands during construction with residual disturbances equal to 50 acres of timberlands • Impacts on property values are minimal and short-term in nature • *No disproportionate impact on environmental justice population*

Table 2-24. Alternative Route Comparison Summary for Visual Resources, Cultural Resources, Native American Concerns, National Historic Trails, and Socioeconomics and Environmental Justice in Segment 2—Blue Mountains

Alternative Route	Visual Resources	Cultural Resources	Native American Concerns	National Historic Trails	Socioeconomics and Environmental Justice
	and La Grande area (including the City of La Grande sensitive viewing platform: 4-51) would vary, but generally include skylined views that would be partially to fully obstructed by tall evergreen vegetation. Impacts associated with residences for this route variation would be associated with the residence near I-84 and Heber Road, and the residence along Jimmy Creek Road experiencing high impacts • Recreation: High impacts on KOP 2-26 and impacts on the views from KOP 4-19 and KOP 4-40 would both be moderate, including skylined views that would be partially obstructed by tall evergreen trees, and where the alternative route would be co-located with an existing 230-kV transmission line. • Travel Routes: This alternative is generally collocated with an existing 230-kV transmission line thus would have lesser impacts on travel routes than the Applicant's Proposed Action Alternative **Federal Land Conformance:** • Non-conformance within the USFS-administered lands through the BA-011 Blue Mountains Forest VAU with VQOs established in the Wallowa-Whitman National Forest LRMP	• Avoids the Glass Hill area • Based on RLS cultural data collected for alternative routes in the vicinity of North Powder and La Grande (La Grande Commercial Historic District), resources that potentially could be affected visually are similar to those identified along the Applicant's Proposed Action Alternative. Compared to the Applicant's Proposed Action Alternative, the Mill Creek Alternative is considerably closer to La Grande and lies slightly farther from North Powder **Impacts** • 0.5 mile of high cultural resource sensitivity. Additional miles of high cultural resource sensitivity would be anticipated due to one unrecorded segment of the Oregon NHT along this alternative route • 18.9 miles of moderate cultural resource sensitivity • 14.6 miles of low cultural resource sensitivity • 0 miles of no cultural resource sensitivity	Indian tribe than Variation S2-B2 • Avoids potential resources of Native American concern in the Glass Hill area • Ongoing coordination and consultation with Native American sovereign tribal governments may identify additional resources of concern	• No direct impacts on contributing trail segments, high impacts on views from contributing trail segments • High impact on views from Emily Doone Grave 1868 trail-associated cultural site. Moderate impacts on views from the Oregon Trail Monument and Stone Marker south of Hilgard, Trading Post Site, Pioneer Grave Sites, Pioneer Campsite, D. Dodge 1885 Inscription, Stage Station, and Clover Creek Station trail-associated cultural sites **Biological, Natural, and Other Resources** • No key issues identified	

Table Note:
ACEC = area of critical environmental concern
APE = area of potential effects
AUM = animal unit month
BLM = Bureau of Land Management
CAFO = confined animal feeding operation
CRP = Conservation Reserve Program
EFU = exclusive farm use
FAA = Federal Aviation Authority
LRMP = land and resource management plan
KOP = key observation point
NHT = national historic trail
NPS – National Park Service
NRHP = National Register of Historic Places
NWSTF = Naval Weapons Systems Training Facility
P = Private
RLS = reconnaissance level survey
ROS = recreation opportunity spectrum
SEORMP = Southeastern Oregon Resource Management Plan
USFS = U.S. Forest Service
VAU = Visual Analysis Unit
VQO = Visual Quality Objective
VRM = visual resource management
WSR = Wild and Scenic River

3.2.3 Union County, Oregon

In Union County, the Proposed Route includes portions of the Proposed Route that were included in the Draft Amended pASC and the Mill Creek Route that was developed by the BLM. In addition, the BLM also developed routes that collocated the Project with the existing La Grande to Quartz 230-kV transmission line. IPC also developed the Morgan Lake Alternative to the Mill Creek Route.

3.2.3.1 The Proposed Route

The Proposed Route (Mill Creek Route and the collocated route) are part of the Proposed Route in Union County. These routes were developed by the BLM with input from Union County. In Union County, the Mill Creek Route and the Magpie Peak Route replaced 32.3 miles of the Proposed Route that was included in the Draft Amended pASC. Only 7.6 miles of the Proposed Route was included in the Draft Amended pASC and is being carried forward into the Amended pASC. This portion of the Draft Amended pASC route is located in the Blue Mountains between Kamela and Hilgard (see Figure 3.2-3).

3.2.3.2 Magpie Peak Route

The BLM developed the Magpie Peak Route in Union and Baker counties to collocate the Project with the existing Quartz to La Grande 230-kV transmission line. Where possible, the Project was located within 250 feet of the existing transmission line. See Section 3.1.1.2 of Exhibit B for a detailed discussion of extra high voltage transmission line separation criteria.

3.2.3.3 IPC's Morgan Lake Alternative

The Morgan Lake Alternative was developed by IPC with input from local land owners. The Morgan Lake Alternative crosses fewer parcels with residences, does not cross the Ladd Marsh Wildlife Management Area, does not cross Interstate 84, and is 0.5 miles shorter than the corresponding section of the Proposed Route (Mill Creek Route; see Table 3.2-2).

Table 3.2-2. Comparison of Constraints between the Mill Creek Route and the Morgan Lake Alternative in Union County

Resource Group/ Resource Name	Mill Creek Route (miles)	Morgan Lake Alternative (miles)
Length	19.0	18.5
Fish and Wildlife		
Big Game Deer Winter Range (ODFW)	19.0	15.3
Big Game Elk Winter Range (ODFW)	19.0	16.5
Elk Summer Range (USFS)	6.1	15.6
Elk Winter Range (USFS)	17.0	16.3
Elk Winter Range Concentration (USFS)	8.7	3.2
Mule Deer Summer Range (USU)	2.7	7.8
Mule Deer Winter Concentration (USU)	16.4	10.7
Mule Deer Year Round Population (USU)	16.4	10.7
Land Use		
Fire Management Unit	19.0	18.5
Fire Management Zone	19.0	18.5
Grazing Allotment (OR Mgmt Category: C)	1.9	6.9
Recreation Opportunity Spectrum	–	0.8

Resource Group/ Resource Name	Mill Creek Route (miles)	Morgan Lake Alternative (miles)
Wildland Urban Interface (ODF)	4.2	4.6
Ownership		
Bureau of Land Management	–	0.8
Private	19.0	17.7
Visual Resources		
BLM VRM Class 3	–	0.8
Water and Wetlands		
Wetlands (ONHIC)	0.2	<0.1
Zoning		
Agriculture-Grazing	1.7	1.3
Timber-Grazing	17.3	17.2

ODF – Oregon Department of Forestry
ODFW – Oregon Department of Fish and Wildlife
ONHIC – Oregon Natural Heritage Information Center
USU – Utah State University
USFS – United States Forest Service
VRM – Visual Resource Management

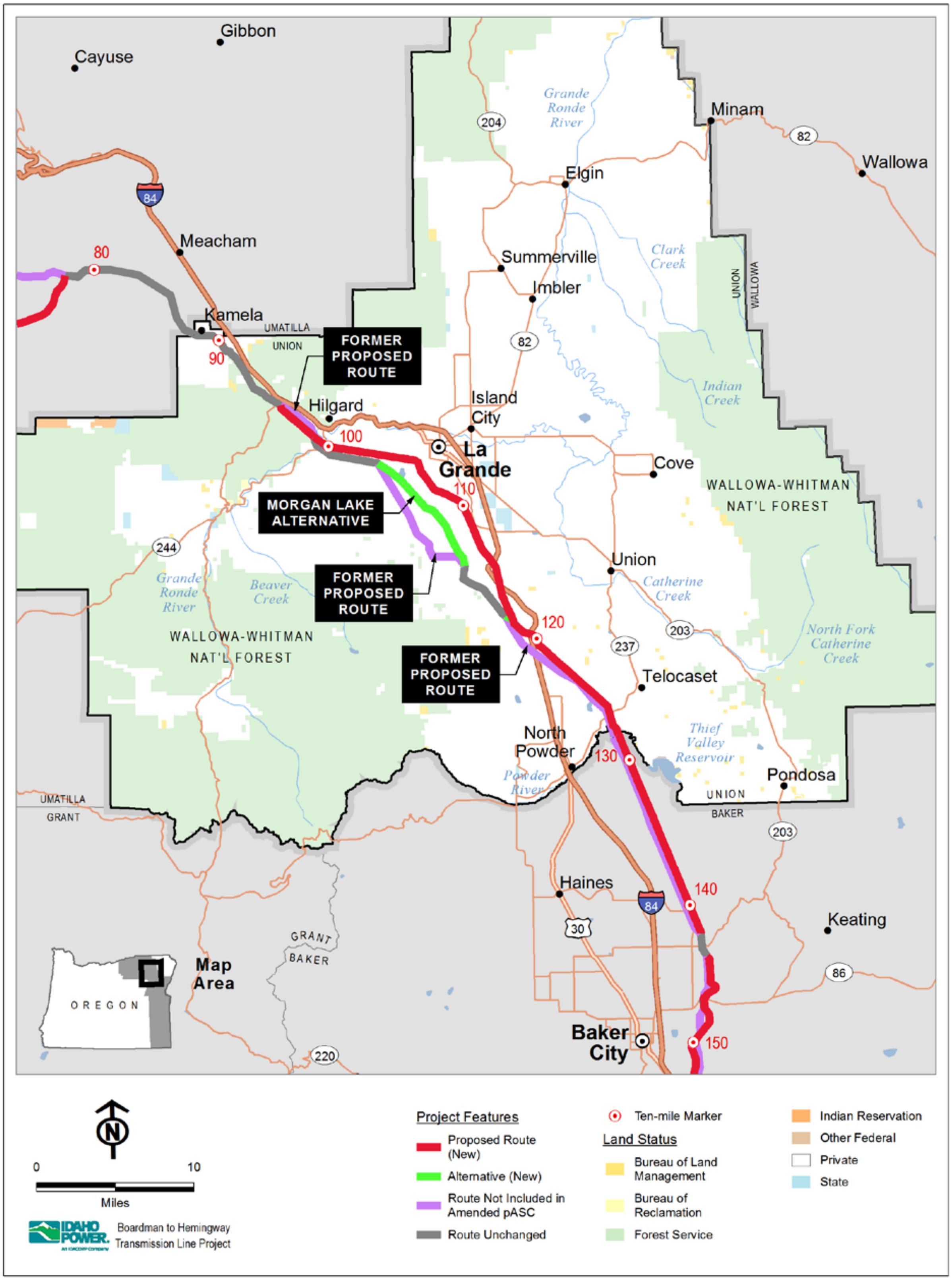

Figure 3.2-3. Changes in Union County Between 2016 and 2017

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*	*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*
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.
Segment 2—Blue Mountains (Map S-3b)								
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*	*This route variation was developed to colocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line within the USFS-designated utility corridor.*

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 S2-B2 (Map S-3b, Area B)	*3.8*	*0.0*	*0.0*	*3.8*	*2.6*	*1.2*	*0.0*	*This route variation was developed to colocate 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.*
Variation S2-C2 (Map S-3b, Area C)	*8.8*	*0.0*	*0.0*	*8.8*	*1.6*	*7.0*	*0.0*	*This route variation was developed in response to comments on the Draft EIS to avoid a concentration of elk population.*
Variation S2-E2 (Map S-3b, Area E)	*2.6*	*0.0*	*0.0*	*2.6*	*0.4*	*2.2*	*0.0*	*This route variation was developed to colocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line.*
Variation S2-F2 (Map S-3b, Area F)	*12.2*	*0.0*	*0.0*	*12.2*	*11.5*	*0.7*	*0.0*	*This route variation was developed to colocate the alignment of the proposed transmission line closer to a portion of the existing 230-kV transmission line.*
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*	*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.*
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.

COMMENT(S)

RESPONSE(S)

N5 **Glass Hill Coalition**

comment@boardmantohemingway.com

From: Dan Turley <dgtur7mm@gmail.com>
Sent: Wednesday, March 18, 2015 7:04 PM
To: comment@boardmantohemingway.com; B2H@idahopower.com; maxwell.woods@state.or.us
Subject: Draft Environmental Impact Statement (DEIS) Comment - Glass Hill Coalition
Attachments: B2H Complete DEIS Response March 17 2015.pdf

Attached electronic comment of my input to the DEIS. Hard copy was sent to the Vale, Oregon address today.

Thanks

Dan Turley
855 East Quince Ave
Hermiston, OR 97838

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COMMENT(S)

RESPONSE(S)

N5	Glass Hill Coalition (cont.)

March 16, 2015

Boardman to Hemingway Transmission Line Project
P.O. Box 655
Vale, OR 97918

RE: Boardman to Hemingway Transmission Line Project Draft Environmental Impact Statement (DEIS)

The following input to the DEIS is specific to the proposed portion of the transmission line where it would cross the predominately forested lands on Glass Hill and then proceed northwest above Rock Creek in Union County, see project map with notes and references titled 'Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway, Map 8 of 23', *attached*.

Negative Impacts of Proposed Route Across Glass Hill

This route, including the alternate, as proposed by Idaho Power Company (IPC) will have unacceptable long term negative impacts on wildlife and their habitat; on the predominately forested areas; on the visual impact from the National Forest land to the south and west; and on the numerous land owners in this area.

The more recent and current landowners in this area have worked hard to restore their properties to a more undeveloped and natural state and have been very successful in returning their land and streams to the more pristine conditions that were present prior to the turn of the century when the area was extensively homesteaded and then in more recent years when the area was extensively roaded and logged. The landowner efforts have resulted in an extraordinary restoration to the areas original natural resources and character, this corresponding improvement in habitat has contributed to a substantial rebound in the wildlife population and more recently returning numbers of steelhead to Rock Creek.

Wildlife
The DEIS correctly identifies that regardless of the route across Glass Hill the line would result in 'long-term high impacts' to the wildlife habitat, see page 3-288, Segment 2 – Wildlife Habitat. The DEIS also properly shows that this route will go through a large portion of existing high quality elk wintering range, see 'Figure 3-18 Elk Habitat map on page 3-242, *attached*.

N5a

Forested Lands
The route across Glass Hill does not meet the requirements of the Oregon Statewide Planning Goals & Guidelines, Goal 4: Forest Lands, *attached*. On Page 3-395 of the DEIS, compliance with this condition is identified and it states 'The purpose of Goal 4 is to conserve forest lands.' As stated below:

> OAR 660-015-0000(4), Forest Land, attached:
> To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Then under the Guidelines Section, it has the following requirements:

> B. IMPLEMENTATION
> 1. Before forest land is changed to another use, the productive capacity of the land in each use should be considered and evaluated.
> 2. Developments that are allowable under the forest lands classification should be limited to those activities for forest production and protection and other land management uses that are compatible with forest production. Forest lands should be available for recreation and other uses that do not hinder growth.
> 3. Forestation or reforestation should be encouraged on land suitable for such purposes, including marginal agricultural land not needed for farm use.
> 4. Road standards should be limited to the minimum width necessary for management and safety.
> 5. Highways through forest lands should be designed to minimize impact on such lands.
> 6. Rights-of-way should be designed so as not to preclude forest growth whenever possible.
> 7. **Maximum utilization of utility rights-of-way should be required before permitting new ones.**
> 8. Comprehensive plans should consider other land uses that are adjacent to forest lands so that conflicts with forest harvest and management are avoided.

N5a The Final EIS has been updated to include evaluation of existing timberlands and analysis of potential impacts. See Section 3.2.6 for further detail. In addition, impact analysis and mitigation measures have been more clearly identified and organized to address impact and mitigation associated with revegetation. See also Section 3.17 for discussion of economic impacts related to Timber resources.

COMMENT(S)	RESPONSE(S)
N5 **Glass Hill Coalition (cont.)**	
My calculations indicate that the proposed route across Glass hill from mile point 117 to 122 will go through approximately 5 miles of property that has historically been moderately to heavily forested (as identified by reviewing areas shown in green on the USGS topography map for this area) and if the 250 foot wide utility corridor is placed on this 5 mile route it will result a 151 acre loss of timber producing land which will also reduce the thermal/hiding cover for the wildlife.	
N5b — Fish Even though the DEIS In Section 3.2.5, Fish Resources on page 3-369 identifies that – "short-term direct and indirect effects to listed and candidate species from project construction of the Glass Hill Alternative would be high", it does not appear that the DEIS properly evaluated the potential long term negative impacts to the fish habitat in Rock Creek. On page 3-368 it seems to only consider stream crossings and states: Glass Hill Alternative The Glass Hill Alternative crosses the same Upper Grande Ronde River tributary streams and as the Proposed Action and has the same number of stream crossings, although 2 crossings would be at different locations than the Proposed Action. Both crossings would occur on perennial streams at a culvert. Both stream crossings support fish populations; one crossing on Little Rock Creek supports redband trout and other resident fish species (non-protected species) and the second crossing at Rock Creek supports Snake River Basin steelhead and redband trout. The Glass Hill Alternative would have one less crossing than the Proposed Action where steelhead are present. Given the proposed route would run along Rock Creek for over 8 miles from mile point 109 to between mile point 118 and 119 where it turns east to go across Glass Hill and would be located on hillsides and ridgelines that drain into Rock Creek and thus the effects are not just limited to the 'crossings'. Given the severe slopes in several areas along the route it should be expected this route will result in additional and ongoing sedimentation making it into Rock Creek but it does not appear this has been properly evaluated?	N5b — The Applicant has committed to updated design features and selective mitigation measures designed to minimize anticipated potential B2H Project impacts from sediment transport to streams from upland locations, including the use of existing roads and selective removal of vegetation. Please refer to Section 3.2.5 of the Final EIS for analysis of these impacts.
N5c — Back in the mid 1970's I spent considerable time on Rock Creek in the spring and observed spawning anadromous fish in Rock Creek south of where the proposed line comes over Glass Hill at mile point 118. Then later after the surrounding area was extensively logged I no longer observed these fish. Recent studies conducted by the Confederated Tribes of the Umatilla Indian Reservation, letter to Mr. Allen, *attached*, are finding increasing numbers of spawning steelhead which are identified as an Endanger Species Act fish species. This summary also notes that the Rock Creek watershed is "…ranked second highest priority for conservation actions within the Upper Grande Ronde by the Natural Resource Conservation Service (NRCS) 2013 Conservation Implementation Strategy." The DEIS needs to do more than just evaluate the 'crossings' associated with Rock Creek and it needs to perform a more thorough evaluation of the fish species present as it does appear that 'endangered species' are present and will be negatively impacted by both the proposed and alternate route.	N5c — Fish species presence within the project area has been analyzed to include steelhead, Chinook salmon, redband trout, and others. Updated design features and selective mitigation measures designed to minimize anticipated potential B2H Project impacts have been developed to minimize impacts on fish and fish habitat. Refer to Section 3.2.5 of the Final EIS for analysis of these impacts.
N5d — Visual In reviewing the EIS I did not find where the visual impact of the proposed line route across Glass Hill was evaluated when being viewed from people using the National Forest land to the west and south of the proposed route, from areas in the proximity of Elk Mountain, the ridges along Rock Creek and from the Beaver Creek watershed area as shown on the attached Aerial Parcel Map. Given the proposed route would come across the top of Glass Hill and be on the 'skyline' for over 1 mile at mile point 119 to 120, and then due to the line route proceeding along the western facing slopes and ridge lines above Rock Creek for over 6 miles from mile point 113 to 119 which is predominately open landscape, it will be highly visible for these public lands when people are utilizing them to enjoy remote and undeveloped experiences, whether hunting, hiking, ATV riding, etc.	N5d — Comment noted. The analysis of impacts to scenic quality is an indicator of potential impacts to areas from dispersed users.
N5e — In this area the line will also be in view of the numerous private land owners beyond that identified from the 'Elk Song Platform' and which will degrade the visual quality to a greater extent than stated in the DEIS. The land owners have and enjoy these properties because of the remote and undeveloped character of this area and the visual impact needs to be considered from the entirety of these properties not just from selected 'platforms'.	N5e — Comment noted. An analysis of impacts from residences that are most likely to be impacted has been added to the Final EIS. The analysis of impacts to scenic quality is also an indicator of potential impacts to areas regardless of the selected platforms.
N5f — In the visual impact section of the report it appears to only address the visual impacts of this section of the line when viewed from the developed area along interstate I-84; from areas around the Grande Ronde valley; and from La Grande. The impact of viewing the line from the remote areas along the proposed	N5f — Comment noted. The analysis of impacts to scenic quality is an indicator of potential impacts to areas from dispersed users.

COMMENT(S)

RESPONSE(S)

N5	Glass Hill Coalition (cont.)

N5f

route will have a significantly higher negative impact as compared to being viewed from areas with numerous existing developments; ie. the freeway, existing transmission line, residences, farm and ranch buildings, communication towers, etc. The high visual impacts form the more remote areas should have a significantly higher significance than the visual impacts from the areas with existing developments.

N5g

Noise
My experience with the area between proposed mile point 115 and 119 is that it is without noise/sound from civilization the majority of the time when motor vehicles are not present and firearms are not being discharged. In this area the sounds of the traffic on the freeway, the sound of trains and other mechanical noises from La Grande and the valley are not present. It is still an area where the sounds of nature and/or lack of un-natural sound can be enjoyed the majority of the time.

I strongly suspect that this serenity is a contributing factor in the high wildlife populations in this area. Construction of the line in this area would introduce the corona/static noise associated with the electrical potential in the line and result in long term negative impact on the serenity of this area. At a minimum, the impact of un-natural noise on remote areas and wildlife should be given greater consideration than the noise impacts on areas where all types of un-natural noise are already present and ongoing.

N5g

Noise is addressed in Section 3.2.18 of the EIS. Corona is a weak source of audible noise and the proposed line is designed to meet applicable noise limits. The levels of audible noise are further reduced with distance. In fair weather the noise may not be detectable at all and indoors the levels would be still lower. The Applicant will comply with established noise ordinances and suggested noise guidelines to reduce the potential for adverse noise impacts at noise-sensitive receptors.

N5h

Recommended Lower Impact Route to the East of Glass Hill

To minimize the impact of the line routing through this area the line should follow the existing 230 kv transmission line from mile point 108 to 126 and 'skirting' La Grande as drawn on the attached 'Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway, Map 8 of 23', *attached*.

This route would significantly reduce the negative impacts of the proposed route as a result of the following:

- Predominately follows the existing electrical utility corridor eliminating the need to create a new corridor and thus reducing the amount of forest land, wildlife habitat, recreational areas and landowners impacted.
- Stays in predominately opened landscape and will be only visible from Morgan Lake in a small area to the northwest.
- Remains 'out of sight' of the National Forest lands as described previously thus eliminating the resulting negative visual impacts from these remote areas.
- Follows closer to the edge of the elk wintering range in already developed areas as compared to going through the more remote east quarter of the area which will be about 5 miles away from the easterly edge, see attached Elk Habitat Map, November 2014, *attached*.
- The visual impact of this new line as it follows the existing 230 kv line is minimized as the majority of the line is located against vegetated hillsides that will obscure the view of the line and the line will only be 'skylined' in two short sections where it would cross ridgelines south and west of La Grande.
- Prevents adding new roads and developments on the undeveloped portion of Glass Hill which would destroy the remote character of this area resulting in reduced land and recreational values for both the land owners and the public using adjoining lands.
- Will protect Rock Creek from additional sedimentation and the effects on the returning fish species.
- Will not add noise/sound to the remote area west of Glass Hill

This route would further reduce the disturbance of even more acres than described below in Section 2, Proposed Actions and Alternatives, on page 2-72, by following the existing line further than the Proposed Action and thus avoiding the additional effects on the 'relatively undisturbed landscape' on Glass Hill.

> In the Blue Mountains Segment, the Proposed Action is the Environmentally and Agency Preferred Alternative primarily because the Proposed Action would disturb fewer acres of winter range and cause less vegetation disturbance. When compared to the Glass Hill Alternative, the Proposed Action would disturb fewer acres of winter range during construction and fewer acres during operation. Agency considerations include the closer alignment of the Proposed Action to an existing transmission line for 3 of the 7.5 miles and avoidance of effects on a relatively undisturbed landscape.

N5h

Comments noted. Based on comments received by the BLM on the Draft EIS, collaboration with the counties, and on further discussion between the Applicant and landowners, a number of recommended routing options were incorporated into the network of alternative routes analyzed for the Final EIS. Refer to Sections 2.1.1.3 and 2.5.2. Analysis of the alternative routes is reported throughout Chapter 3.

COMMENT(S)

N5 **Glass Hill Coalition (cont.)**

N5i

Idaho Power Company Reasons for not Considering this Route

Myself and others have proposed various versions of the route proposed above to IPC on numerous occasions and as a result they provided the attached 'Feasibility of Locating the B2H Transmission Line East of Glass Hill' document with the associated 'La Grande Vicinity Map dated January 2011', *attached*, presenting the following reasons for not utilizing this route:

- High visibility from travelers on a 5 mile section of I-84 and from portions of the city of La Grande;
- Concerns expressed by Union County representatives;
- Proximity to residences on Foothill Ladd Canyon Road;
- Up to 3.6 miles of landslide prone hillsides;
- Five to six miles of severs side slopes;
- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed; and
- Does not meet 1500 foot reliability separation criteria.

I would provide the following information in response to each of the concerns presented by IPC:

- High visibility from travelers on a 5 mile section of I-84 and from portions of the city of La Grande;
  Although a valid concern, the resulting higher negative impacts of placing the line across the undeveloped portion of Glass Hill should far outweigh the visual impacts to travelers on a freeway and residents in the city with developments already present all around it.

- Concerns expressed by Union County representatives;
  These concerns were never elaborated on by IPC but reasoning for routing the line across Glass Hill as compared to following the existing line should follow the same reasoning as presented above.

- Proximity to residences on Foothill Ladd Canyon Road;
  Again, although a valid concern it should not result in placing the line across the undeveloped portion of Glass Hill as compared to placing it along the existing transmission line and other developments in the valley.

N5j

- Up to 3.6 miles of landslide prone hillsides;
  IPC provided information showing historical slide areas highlighted, as a result I followed the entire length of the existing 230 kv line in this area and did not find any indication of any recent slide activity and if this is an actual concern it would seem that IPC would have moved the existing 230 kv line. The topographic maps of the location along the existing 230 kv line route do not show features such as springs or areas that will hold rain water and result in the hill side becoming unstable in the future.

- Five to six miles of severe side slopes;
  The hillsides above Foothill Road are not significantly 'steep', but even though IPC asserts them to be steep, they were able to install the existing 230 kv line along this hillside and if they were able to construct this line and others like the transmission line to Hells Canyon Dam they should be able to construct the line along Foothill Road without much trouble? They seem to be claiming that it may not be 'easy' to construct, this should not be a reason to run it through the undeveloped higher impact area on Glass Hill.

- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed;
  Another valid concern but placing the line across slightly over 1 mile of the wildlife area which is predominately open landscape and that already has a transmission line on it would have a significantly lower impact on wildlife than placing it across over 10 miles of undeveloped forested land with exceptional wildlife habitat. I have contacted the Oregon Department of Fish and Wildlife (ODFW) and the only concern I identified from them was associated with the line being on or close to the wetlands which could result in significant bird impacts, but placing the line off the wet lands area above Foothill Road did not cause them significant concern. I have extensive documentation confirming this and I also have

RESPONSE(S)

N5i Comments noted. Based on comments received by the BLM on the Draft EIS, collaboration with the counties, and on further discussion between the Applicant and landowners, a number of recommended routing options were incorporated into the network of alternative routes analyzed for the Final EIS. Refer to Sections 2.1.1.3 and 2.5.2. Analysis of the alternative routes is reported throughout Chapter 3.

Comments on the Draft EIS expressed that not enough information was provided in the Draft EIS to enable the reviewers to understand where impacts would occur and where mitigation would be applied to reduce impacts. Chapter 2, Section 2.5.1 of the Final EIS presents an explanation of the study and analysis approach employed for the B2H Project, Chapter 3 has been expanded to provide more description of the methods for used for analyzing effects associated with each resource (tiered to the overall approach) and to provide more information about the resources, mitigation applied to reduce impacts, and residual impacts on resources along each alternative route by segment. In addition, a map volume of large-scale maps is provided to present resource data and to show the level of residual impact on the resources along all of the alternative routes.

N5j See response to Comment N5i.

COMMENT(S)

RESPONSE(S)

N5 **Glass Hill Coalition (cont.)**

N5j documentation showing that IPC had not had any discussions with the ODFW on the possible line location across the wildlife area until April 4, 2011 which demonstrates they only made assumptions about ODFW not wanting the line to cross the wildlife area during the scoping and proposed route development.

N5k

- Does not meet 1500 foot reliability separation criteria;

IPC was never able to provide any information that validated the separation criterion of 1500 feet and I did extensive research to try and validate it myself without success. Chapter 2 of the DEIS report provides the following information starting on page 2-67:

2.4.2.1 INSTALL DOUBLE-CIRCUIT NEW TRANSMISSION LINES ON EXISTING TOWERS IN THE STUDY AREA
One of IPC's objectives in proposing the B2H Project is to improve system reliability between the Boardman and Southeastern Idaho areas. System reliability is generally improved by adding redundant transmission lines so that if one line is damaged or otherwise not in service, the other one can continue to provide service. However, locating the proposed B2H 500-kV line closer than 250 feet to other high-1 voltage lines would create "Adjacent Transmission Circuits" (WECC 2012). Adding Adjacent Transmission Circuits does not improve a system's reliability rating because a single event could disrupt service on both transmission lines. This alternative was considered but eliminated from detailed analysis because it is ineffective in responding to the agencies' need to respond to the SF 299 application and because it is ineffective in meeting IPC's purposes for proposing the B2H Project.

This information was not in the WECC System Performance Criteria that IPC provided me per my numerous requests on the separation criteria and although I was not able to find information supporting this, if correct it would indicate that the new line could be constructed up to 250 feet from the existing line, thus invalidating the information they provided to me on the 1500 foot restriction.

As a result of this and because there have been at least two 500 kv transmission lines built in recent years that are less than 250 feet away from existing 500 kv, and 230 kv lines, indicates to me that this criteria/restriction may not exist. Last year BPA completed construction of a new 500 kv transmission line within approximately 100 feet from two existing 500 kv lines on the north side of the Columbia River between the John Dan and McNary Dam substations. More information on this line can be found at (http://www.bpa.gov/transmission/Projects/line-projects/Documents/map-McNary-John_Day-October_2008.pdf), map *attached*. Then I've *attached* pictures of the 500 kv transmission line from the Calpine power plant south of Hermiston, Oregon that connects to the BPA McNary Substation which was constructed next to the existing north end of the same 230 KV line that goes to La Grande and I measured the distance between these lines as shown on the pictures. This shows that the support structures were placed less than 100 feet apart with the conducting lines only being approximately 75 feet apart.

Lastly, *attached* is a picture of the numerous 500 kv lines above Rufus, Oregon which creates more doubt on the existence of any significant separation rule and begs the question of the significance of having the B2H line built a significant distance from the existing 230 kv line when all of these lines are so close together?

Again, even if a separation criterion of some type does exist, this should not result in placing the line across Glass Hill and creating the higher adverse impacts.

N5k Based on comments received by the BLM on the Draft EIS, collaboration with the counties and their constituents occurred, resulting in a number of recommended routing variations/options, which were incorporated into the network of alternative routes analyzed for the Final EIS. Refer to Sections 2.1.1.3 and 2.5.2. Analysis of the alternative routes is reported throughout Chapter 3. The analysis has been expanded to include alternative route variations with careful consideration of county lands and colocation with existing facilities (including transportation facilities). Colocation with existing utilities is given preference where feasible.

The BLM understands the Applicant considered a range of technologies for high-voltage transmission and considers the project description to reflect the best available technologies.

EIS Information Correction/Clarification

N5l It needs to be noted that the information provided in the Executive Summary on page S-7 and partially restated again in Chapter 2, Proposed Action and Alternatives, on page 2-57 on the Glass Hill Alternative is not correct, see information copied from page S-7 below:

Glass Hill Alternative
The Glass Hill Alternative was developed to address concerns about the Proposed Action's proximity to the Ladd Marsh Wildlife Management Area and visibility concerns from La Grande in Union County. The Glass Hill Alternative is approximately 7.5-miles-long located to the west of the Proposed Action on private land in Union County near La Grande, Oregon. The Glass Hill Alternative is the same length as the Proposed Action.

N5l These errors have been corrected.

COMMENT(S)

RESPONSE(S)

N5 **Glass Hill Coalition (cont.)**

N5l

Neither the proposed route across Glass Hill nor the alternate route are in '…proximity to the Ladd Marsh Wildlife Management Area', nor should there be any '…visibility concerns from La Grande in Union County' as neither of these routes as proposed can be seen from La Grande. These statements would have been true had the line been routed as proposed above along the exiting 230 kv line over to the gas pipeline line route and had the proposed 'Alternate' route followed the existing proposed route across Glass Hill which is not the case. The information on the Glass Alternative needs to be corrected to identify the actual reason why it was proposed as shown.

N5m

Next, in Chapter 2, Table 2-12. Summary of Effects by Alternative on page 2-78 indicates that the Glass Hill routes would have the following Wildlife Resource impacts, 'Big game – long-term moderate impacts. Construction impacts-moderate.' Yet in Chapter 3 on page 3-288 of the EIS it states the following:

> SEGMENT 2—BLUE MOUNTAINS
> Wildlife Habitat
> The majority of habitat that would be impacted in Segment 2 is woodland/forest habitat followed by shrubland habitat. The amount of each primary wildlife habitat type that would be disturbed within the right-of-way for the alternative in Segment 2 is compared by alternative in Table 3-43 in Vegetation Section 3.2.3.
> Forests and woodlands cleared during construction would be impacted for much longer than other habitat types. This impact would displace wildlife that use forests and woodlands for many generations until vegetation can recover. In addition, due to the greater potential for edge effects where this habitat type is cleared compared to the other habitat types, forest/woodlands adjacent to cleared areas would be impacted as well. Though mature forests are rare, the impacts to this forest type, such as edge effects, would be more pronounced due to the more distinct difference between mature forest and adjacent cleared areas, and the longer recovery time of this type of habitat (several decades). Wildlife species that use this habitat type, for example northern goshawk and American three-toed woodpecker, would experience habitat loss until areas re-grow during Project operations, in this case, several decades. Removing trees would cause the loss of both present habitat (canopy cover, live trees, forest understory) and potential future habitat (snags and downed wood from dead, mature trees). Woodland/forest habitat support diverse assemblages of wildlife species, often including species that are specific to that habitat type. Because forests and woodlands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.
> The types of direct and indirect effects that could occur to shrubland habitat are described in Segment 1. Because shrublands support a wide range of species and are slow to regenerate, the Proposed Action and alternative in Segment 2 would result in long-term high impacts to this habitat type.

The information in Table 2-12 appears to be incorrect as The information in Chapter 3 of the report properly identifies that the wildlife habitat impacts for these routes would be 'long-term high impact', not moderate as shown in the table.

N5m Comment noted. Based on comments on the DEIS, the EIS has been updated with a revised impact analysis methodology, and Chapter 2 has been updated accordingly. Refer to Section 3.2.4.3 in the Final EIS.

Please incorporate this input into the Final EIS to ensure this line has the lowest possible impact on the land, the wildlife, the public and the landowners on Glass Hill and throughout the entire length of the project.

Sincerely,

Dan Turley
855 East Quince Ave
Hermiston Oregon, 97838

Representing the Glass Hill Coalition

Attachments:
1. Aerial Parcel Maps, June 2012 Routes, Boardman to Hemingway Map 8 of 23, showing proposed lower impact route and visual impacts from Forest Service lands
2. Figure 3-18 Elk Habitat map from page 3-242 of the DEIS
3. Oregon Statewide Planning Goals & Guidelines, Goal 4: Forest Lands
4. Confederated Tribes of the Umatilla Indian Reservation, letter to Mr. Allen
5. Feasibility of Locating the B2H Transmission Line East of Glass Hill' document with the associated 'La Grande Vicinity Map dated January 2011
6. http://www.bpa.gov/transmission/Projects/line-projects/Documents/map-McNary-John_Day-October_2008.pdf , BPA 500 kv transmission line placed next to existing 500 kv lines
7. 500 kv Power Line located within 100' of 230 kv line near Hermiston, Oregon
8. 500 kv transmission lines above Rufus, Oregon
9. Glass Hill Supporters List, 7 pages

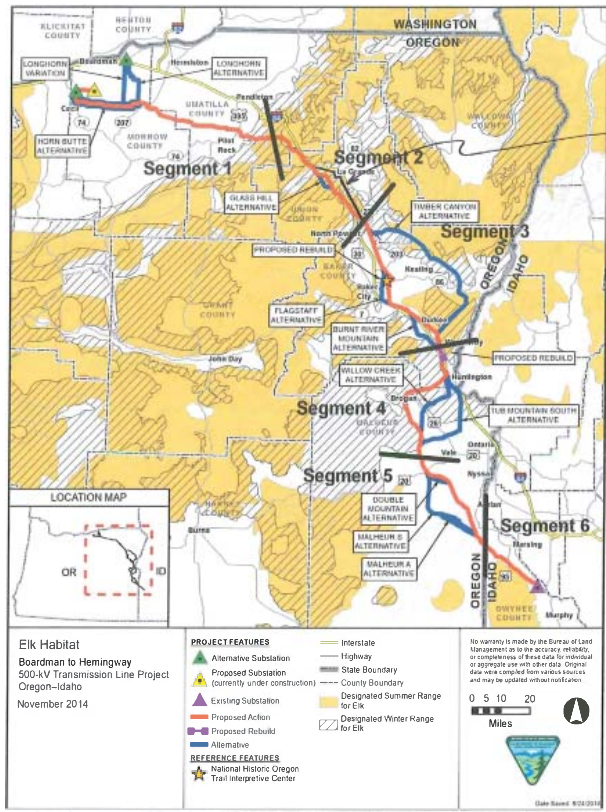
ATTACHMENT

N5	Glass Hill Coalition (cont.)

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 2



Lower Impact Route

Figure 3-18. Elk Habitat

ATTACHMENT

N5 **Glass Hill Coalition (cont.)**

Attachment 3

Oregon's Statewide Planning Goals & Guidelines

GOAL 4: FOREST LANDS

OAR 660-015-0000(4)

To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

Forest lands are those lands acknowledged as forest lands as of the date of adoption of this goal amendment. Where a plan is not acknowledged or a plan amendment involving forest lands is proposed, forest land shall include lands which are suitable for commercial forest uses including adjacent or nearby lands which are necessary to permit forest operations or practices and other forested lands that maintain soil, air, water and fish and wildlife resources.

USES

Forest operations, practices and auxiliary uses shall be allowed on forest lands subject only to such regulation of uses as are found in ORS 527.722.

Uses which may be allowed subject to standards set forth in this goal and administrative rule are: (1) uses related to and in support of forest operations; (2) uses to conserve soil, water and air quality, and to provide for fish and wildlife resources, agriculture and recreational opportunities appropriate in a forest environment; (3) locationally dependent uses; (4) dwellings authorized by law.

IMPLEMENTATION

Comprehensive plans and zoning provide certainty to assure that forest lands will be available now and in the future for the growing and harvesting of trees. Local governments shall inventory, designate and zone forest lands. Local governments shall adopt zones which contain provisions to address the uses allowed by the goal and administrative rule and apply those zones to designated forest lands.

Zoning applied to forest land shall contain provisions which limit, to the extent permitted by ORS 527.722, uses which can have significant adverse effects on forest land, operations or practices. Such zones shall contain numeric standards for land divisions and standards for the review and siting of land uses. Such land divisions and siting standards shall be consistent with the applicable statutes, goal and administrative rule. If a county proposes a minimum lot or parcel size less than 80 acres, the minimum shall meet the requirements of ORS 527.630 and conserve values found on forest lands. Siting standards shall be designed to make allowed uses compatible with forest operations, agriculture and to conserve values found on forest lands.

Local governments authorized by ORS 215.316 may inventory, designate

1

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 3 cont.

and zone forest lands as marginal land, and may adopt a zone which contains provisions for those uses and land divisions authorized by law.

GUIDELINES

A. PLANNING

1. Forest lands should be inventoried so as to provide for the preservation of such lands for forest uses.
2. Plans providing for the preservation of forest lands for forest uses should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

B. IMPLEMENTATION

1. Before forest land is changed to another use, the productive capacity of the land in each use should be considered and evaluated.
2. Developments that are allowable under the forest lands classification should be limited to those activities for forest production and protection and other land management uses that are compatible with forest production. Forest lands should be available for recreation and other uses that do not hinder growth.
3. Forestation or reforestation should be encouraged on land suitable for such purposes, including marginal agricultural land not needed for farm use.
4. Road standards should be limited to the minimum width necessary for management and safety.
5. Highways through forest lands should be designed to minimize impact on such lands.
6. Rights-of-way should be designed so as not to preclude forest growth whenever possible.
7. Maximum utilization of utility rights-of-way should be required before permitting new ones.
8. Comprehensive plans should consider other land uses that are adjacent to forest lands so that conflicts with forest harvest and management are avoided.

2

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 4

Confederated Tribes of the Umatilla Indian Reservation

DNR Fish & Wildlife Programs

46411 Timíne Way
Pendleton, OR 97801

www.ctuir.org email: info@ctuir.org
Phone 541-276-3447

3/11/2015

Dear Mr. Allen,

Following our recent March 2015 conversations about Endangered Species Act listed fish use of the Rock Creek Sub-Watershed I would like to give you an update on the recent fish surveys/sampling conducted by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR).

- **Steelhead Spawning:** CTUIR started steelhead spawning surveys within the sub-watershed in 2011. Each year during the spawning season (March to June) approximately 12.1 miles of streams have been surveyed. These streams include Rock Creek (lower 4.8 mile), Graves Creek (lower 4.2 miles), Sheep Creek (lower 1.2 miles), Little Rock Creek (lower ½ mile), and Little Graves Creek (lower 1.4 miles).
  - The number of redds found each year range between 7 and 14 with an average of 10 per year for all stream miles combined.
  - Typical peak spawning occurs in April and May, However, in 2015 CTUIR observed 12 redds on March 10 within the lower 4.8 miles of Rock Creek.
  - On March 11th 2015 CTUIR biologists observed 3 steelhead redds on Rock Creek within the Elk Song Ranch property boundary. Juvenile *O.mykiss* were also observed on the ranch in Little Rock Creek.
- **Juvenile Steelhead/*O.mykiss* presence:**
  - **Snorkel surveys:** CTUIR conducted snorkel surveys on Rock Creek in 2011, 2012, and 2014 with estimated average densities of 1 fish per m^2 of pool habitat.
  - **Fish Salvage as part of restoration actions:** In summer 2014 CTUIR conducted salvage operations on Rock Creek to remove all fish species (including ESA listed fish) from areas of stream bed/bank disturbance during placement of large wood habitat. Methods used were electro-fishing and sein nets, with 24 sites salvaged. Results were:
    - 3,664 fish salvaged of which 2,185 were ESA listed fish (steelhead/*O.mykiss*).
    - ESA listed fish made up 59.6% of all fish captured.
    - Densities of captured ESA fish were 2.67 fish/m^2 of pool habitat (nearly 3 times the density of fish salvaged in Catherine Creek in the same year).
    - Snorkel surveys underestimated fish densities by approximately 60%
- **Juvenile Chinook Salmon presence:**
  - CTUIR recorded 30 juvenile Chinook in 2011 during snorkel surveys.

Limiting factors affecting the recovery of ESA fish species within this sub-watershed have been identified by the Grande Ronde Subbasin Plan (2009), Oregon Draft Recovery Plan for Spring/Summer Chinook and Steelhead Populations (2010), and Bonneville Power Administration's (BPA) Atlas process (2014) as:

- 1.1 Habitat Quantity: Anthropogenic Barrier
- 4.1 Riparian Condition: Riparian Condition
- 4.2 Riparian Condition: LWD Recruitment (STS)
- 6.1 Channel Structure and Form: Bed and Channel Form
- 6.2 Channel Structure and Form: Instream Structural Complexity
- 7.2 Sediment Condition: Increased Sediment Quantity
- 8.1 Water Quality: Temperature
- 9.2 Water Quantity: Decreased Water Quantity

Treaty June 9, 1855 ~ Cayuse, Umatilla and Walla Walla Tribes

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 4 cont.

Confederated Tribes *of the* Umatilla Indian Reservation

DNR Fish & Wildlife Programs

46411 Timíne Way
Pendleton, OR 97801

www.ctuir.org email: info@ctuir.org
Phone 541-276-3447

The watershed is also ranked second highest priority for conservation actions within the Upper Grande Ronde by the Natural Resource Conservation Service (NRCS) 2013 Conservation Implementation Strategy.

As we discussed in early March water run-off from the ridges and slopes does naturally contribute water and sediment to the stream with these slopes typically remaining saturated for extended periods through the winter and spring into early summer. However, the addition of new roads within the Rock Creek drainage would be a concern for the potential negative impacts from concentrated or increased sediment supply to the stream system, particularly along the slopes and ridges of Rock Creek (as sediment quantity has been identified as one of the limiting factors affecting the recovery of listed species).

We look forward to working with you on restoration projects along the 13 miles of fish bearing streams on your ranch. These species are not only listed as threatened and/or endangered, but are also historically and culturally significant to the Tribe.

Leslie M Naylor

CTUIR Dept Fish and Wildlife
Assistant Fish Habitat Biologist
Grande Ronde Fish Habitat Program
Ag Service Center
10507 North McAlister Rd
Island City, OR 97850
Cell: 1-541-215-2245
Office: 1-541-429-7942

Treaty June 9, 1855 ~ Cayuse, Umatilla and Walla Walla Tribes

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 5

Feasibility of Locating the B2H transmission line East of Glass Hill

A question has been raised by local residents about the feasibility of locating the proposed B2H transmission line east of Glass Hill and closer to the existing 230 kV transmission line and natural gas pipeline. The attached figure shows the current location of the proposed (red) and alternative (green) routes as well as a route (solid blue) identified by local citizens during the CAP and designated C11. Nevertheless, it was determined to have more potential impact than either the proposed red or alternative green routes and was eliminated from further consideration by IPC. IPC revisited this analysis and again came to the same conclusion; Route C11 is not a preferred route.

Disadvantages of this route are:

- High visibility from travelers on a five mile segment of I-84 and from portions of the city of LaGrande;
- Concerns expressed by Union County representatives;
- Proximity to residences on Foothill Ladd Canyon Road
- Up to 3.6 miles of landslide prone slopes;
- Five to six miles of severe side slopes;
- Over a mile of Ladd Marsh Wildlife Management Area (LMWA) crossed; and
- Does not meet 1,500 ft reliability separation criteria.

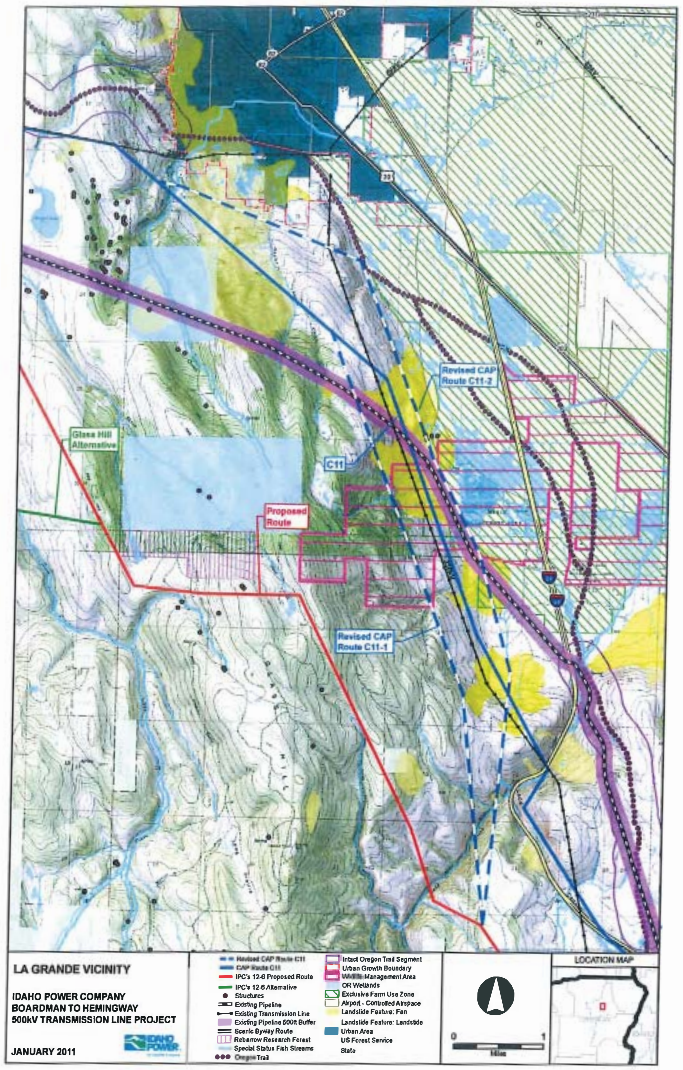
To further consider concerns raised by local residents; IPC identified two additional routes: C11-1 and C11-2. A key consideration in developing these alternatives is the affect on LMWA. The 6,019 acre LMWA contains the largest remnant wetland in northeast Oregon. It is considered a Protected Area under OAR 345-022-0040 and therefore an exclusion area under ESFC regulations. However, there is an exception in the EFSC regulations that allows crossing of a Protected Area if the new transmission line can be located within 500 feet of an existing transmission line or pipeline. Following the existing transmission line crossing through Ladd Marsh WMA on the west side (Revised CAP Route C11-1) is not recommended. To meet the required 1500ft reliability separation would put the route on higher and steeper slopes than either Routes C11 or C11-2 and would still have similar disadvantages as described for Route C11.

However, by regulation, the proposed B2H transmission line could be located within 500ft of the existing pipeline and meet the required reliability separation (Revised CAP Route C11-2). IPC considered this additional route and even with the regulatory option of crossing the marsh, the Revised CAP Route C11-2 would result in greater impacts than the Glass Hill red and green routes. Where the route would need to cross the marsh, it would be located in wet meadow and a semi-permanent wetland associated with West Marsh Habitat Management Unit (HMU) and adjacent to the Glass Hill HMU. The HMU goals include the protection, enhancement and management of wetland habitats to benefit fish and wildlife species and upland habitats for a wide variety of wildlife species. Outside of LMWA it would still have the disadvantages cited above for C11 and C11-1.

ATTACHMENT

N5	Glass Hill Coalition (cont.)

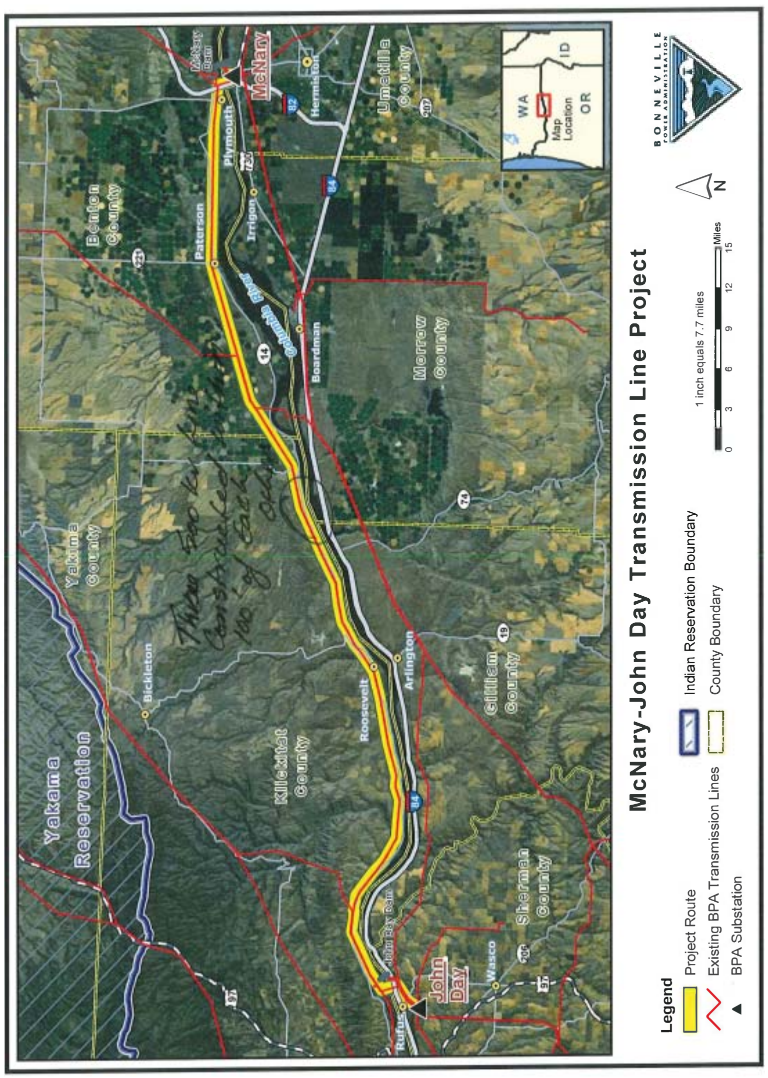
Attachment 5 cont.



ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 6



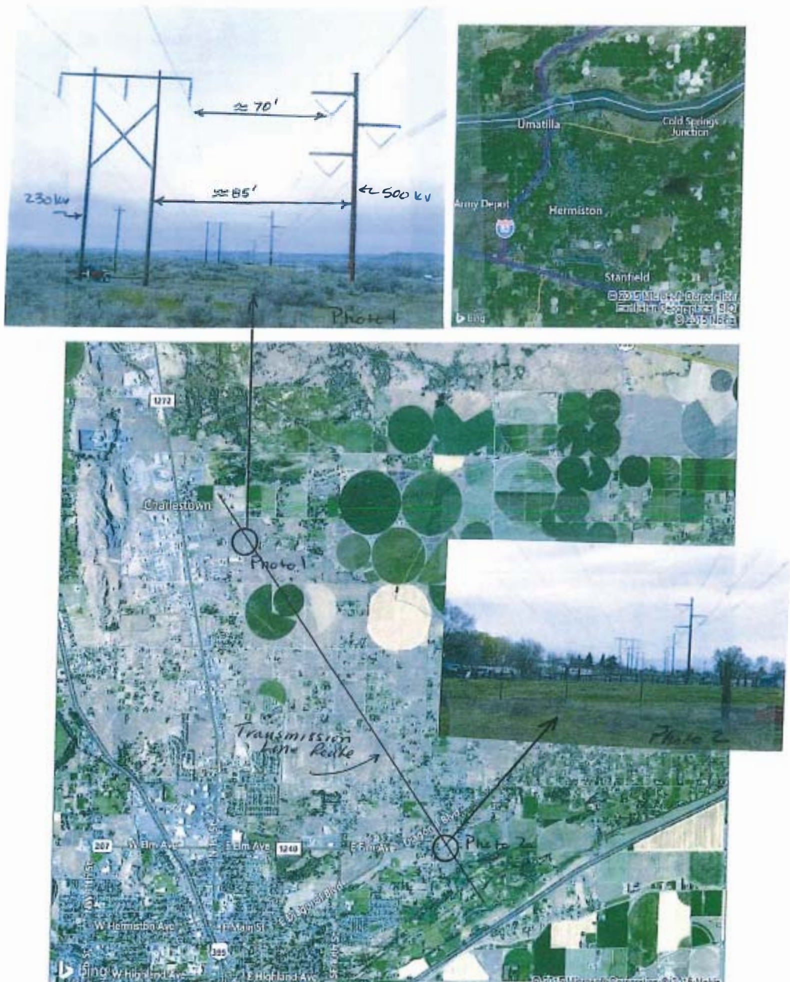
Attachment

N5	Glass Hill Coalition (cont.)

Attachment 7

Print - Maps

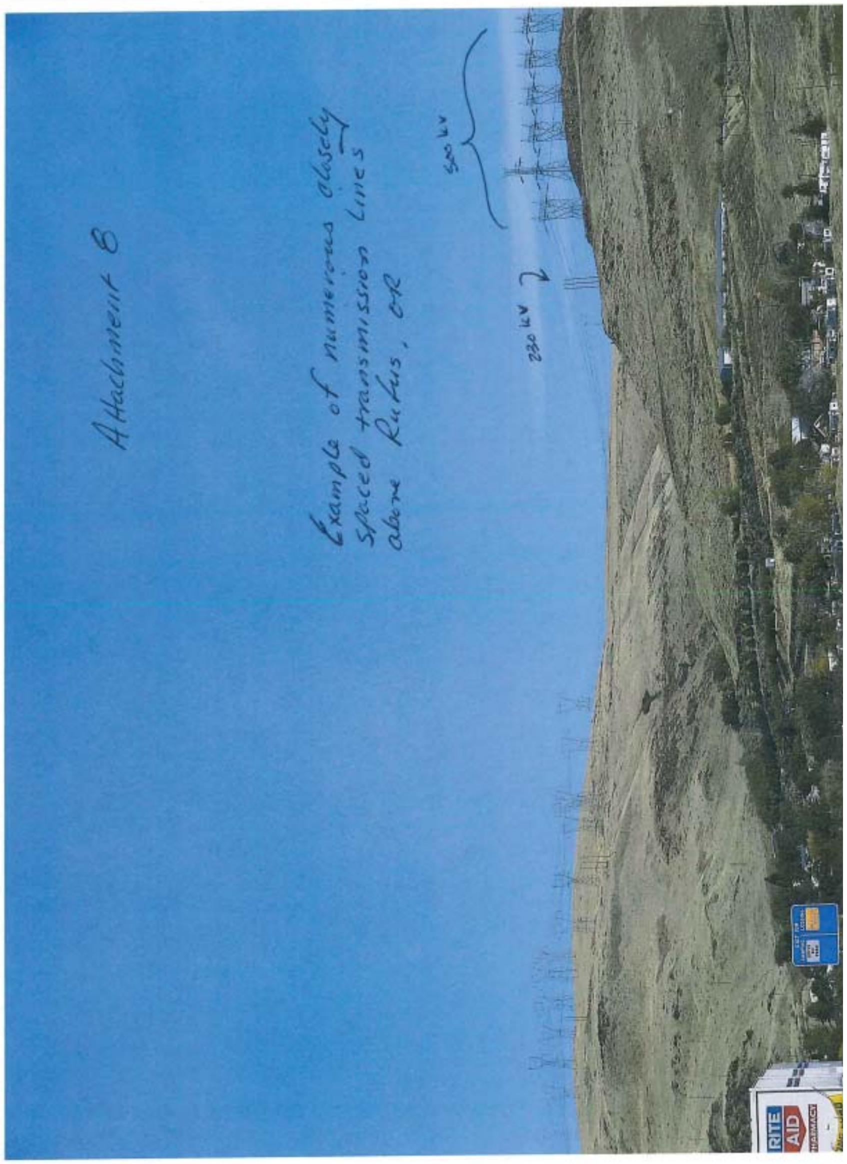
Page 1 of 1



Photo's showing 500 kv + 230 kv transmission lines constructed less than 100' apart and within 100' of dwellings.

ATTACHMENT

N5	Glass Hill Coalition (cont.)



Attachment

N5 | **Glass Hill Coalition (cont.)**

Attachment 9

Glass Hill Coalition Supporters List

The individuals listed oppose the Boardman to Hemmingway (B2H) transmission line route across Glass Hill in Union County and express support for the line to be routed in the location where it will have a lower impact on wildlife, forest lands, remote lanscape and private landowners. Review of the various routes available through this area shows that a route following the the exsisting 230 kv line along Foothill Road ~~to the intersection of the existing gas pipeline route then~~ proceeding along this already created utility easement would be a less impact route and should be the route utilized.

	Name	Address	Phone Number	Email	Signature
1	Daren Coon	365 S 4th Union OR 97883	786-4741	daren.Coon@Northwoodmail.Com	[illegible]
2	Colby Lankford	1704 K. Ave, LaGrande OR	663-6728	Colby.lankford@Northwoodmail.com	[illegible]
3	Justin Kruse	1314 Z Ave LaGrande OR	624-2585	Justin.Kruse@Northwoodmail.com	[illegible]
4	Shannon Rogers	1211 W Ave LaGrande OR	786-2744	Shannon.Rogers@Northwoodmail.com	[illegible]
5	Dave Mann	PO Box 192 Cove OR	568-4565	dave.mann@northwoodmail.com	
6	Clint Williams	10502 W 5th St LaGrande OR 97850	541-663-8574	clint.williams@northwoodmail.com	[illegible]
7	Glen Cole	1500 Baltimore St Elgin, OR 97827	541-805-0345	gacofgems53@yahoo.com	Glen Cole
8	Thad Sells	61840 Blackhawk LaGrande	541-786-1193		[illegible]
9	Ronnie Bonney	61984 Cottwood Rd Lagrande	963-8843		[illegible]
10	Amy Creson	114 Polk Ave, LaGrande, OR	663-6579		Amy Creson
11	Dave Decker	2505 E J Ct LaGrande, OR	910-2630		Dave Decker
12	Cody King	10405 F Ave, Island City	541-377-3545		Cody King
13	[illegible]	62624 Bird Lane	541-910-0776		[illegible]
14	[illegible]	59948 Down Rd	209 275 0520		[illegible]
15	[illegible]	734 N 15 Ave	541-786-4189	Heather Scott	[illegible]
16	[illegible]	346 PO Box LaGrande Oregon	541-910-1304		[illegible]
17	[illegible]	2302 E O CT	541-663-1166		[illegible]
18	Keith Williams	10608 S McAlister	541-910-9126		Keith Williams
19	Shawn Wood	1303 U Ave	541-910-5867		[illegible]
20	Katie Turley	PO Box 1121 LaGrande OR	541 910-5284	kqueene@yahoo.com	Katie Turley

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 9 cont.

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Marc Zollinger	5712 SE 62nd Ave Portland OR	541-228-4745	marc.zollinger@gmail.com	[illegible]
2	Kimberly Slack	5712 SE 62nd Ave Portland OR	971-678-9852	kimmiss@gmail.com	Kimberly Slack
3	Caitlin [illegible]	607 West Delta Union OR	541-562-9407	[illegible]@gmail.com	[illegible]
4	Philip Deard	2016 OAK SE La Grande	541 394 6953	[illegible]@eou.edu	[illegible]
5	Jason Jones	7727 Evers Canyon Rd Elgin 97827	541-536-4918	[illegible]@eou.edu	[illegible]
6	McKenzie Evans	P.O. Box 497 Union, OR 97883	541-915-4405	mevans@eou.edu	[illegible]
7	John Rinehart	PO Box 2887 La Grande 97850	541 962 6270	none	[illegible]
8	Walker Powell	301 Jefferson St La Grande 97850	541-620-8848	none	Walker Powell
9	Daryl Ann Waltenburg	301 Jefferson St. #16 La Grande 97850	541 620 1940	NA	Daryl Ann Waltenburg
10	Lewis Whiting	1409 Walnut St. La Grande	541-589-1488	lewiswhiting@gmail	[illegible]
11	Trey Regester	1617 Washington La Grande OR	307-250-6613	tregester@eou.edu	[illegible]
12	Caitlynn Barton	1607 6th St La Grande OR 97850	541-314-2260	NA	Caitlynn Barton
13	[illegible]	P.O. Box 127C North Hall La Grande OR 97850	541-667-7984	n.burghard@eou.edu	[illegible]
14	KC Kilpatrick	P.O. Box 227D daughtery Hall La Grande 97850	580-5175	Kcann9619@gmail.com	KC [illegible]
15	Rachel [illegible] Chamberlain	202 4th Street La Grande OR 97850	208-833-3629	rchamberlain@gmail.com	[illegible]
16	Makenzie Forsyth	108A Daugherty Hall One University BlVD La Grande OR	509-832-3333	mforsyth@eou.edu	Makenzie [illegible]
17	Jenny Vardanega	219D North Hall, One University Blvd La Grande OR	(971) 225-8936	jvardanega@eou.edu	[illegible]
18	Evan Krohn	1404 N Hall Street	(541) 519-4155	ekrohn1995@gmail.com	Evan Krohn
19	Shaun [illegible]	916 [illegible]	541-683-[illegible]	[illegible]	[illegible]
20	Brian Staebler	44596 Pocahontas Rd. Baker City OR	541-519-2289	[illegible]@gmail.com	Brian Staebler

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 9 cont

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	Thomas Royer	1513 21st St., L.G.	541.514.8166	Walkinboss @Gmail	[illegible]
3	Marie Gaylord	1513 21st St., L.G.	808-294-4348	marie.gaylord@gmail	Marie Gaylord
4	Don House	59620 Glass Hill Rd LG	541 805-8602	donhousenaval@yahoo.com	Donald J House
5	Marti House	59620 Glass Hill Rd LG	541-963-9257	martihouse03@gmail.com	Marti House
6	Jane Wilber	Glass Hill Rd. LG			Jane Wilber
7	Renae Wilber	67828 Grays Corner Rd. Imbler, OR	541-534-4065	[illegible]@eoregonwireless.net	R Wilber
8	Dale Wilber	67828 Grays Crn Rd Imbler, OR	541-534-4065		[illegible]
9	Blaine Wilber	Glass Hill Rd			Blaine Wilber
10	Lester Scott	" " "			By Permission
11	Mark Royer	420 [illegible] Drive Nampa, ID 83686	(208) 442-5469	southpaw826@yahoo.com	Mark D Royer
12	Joel Rice	59848 Glass Hill Rd. La Grande	541-786-2593	joelrice@me.com	[illegible]
13	Paul Peterson	5551 Glass Hill Rd	541-910-2459		Paul Peterson
14	Rick Simmons	62556 [illegible] Rd [illegible]	541-910-4444	[illegible]@yahoo.com	Rick Simmons
15	Michael McAllister	60069 Morgan LK Rd	541 786 1507	WILDLANDMT@NETSCAPE.NET	Michael McAllister
16	Mike Armstrong	80792 [illegible] Rd Hermiston OR	541 980 5633	mike@[illegible].com	[illegible]
17	Carl Mulder	860 Brandon St. Irrigon OR.	541-922-8485	calmulder@gmail.com	[illegible]
18	Shannon Mulder	860 Brandon St. Irrigon OR	541-922-8985	s.roggow@gmail.com	[illegible]
19					
20					

ATTACHMENT

N5 | **Glass Hill Coalition (cont.)**

Attachment 9 cont.

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Daniel Willitts	P.O. Box 166 North Powder, OR	541-898-2713	dlw844@hotmail	[illegible]
2	Brad Allen	48748 McCarty br Rd North Powder	541-962-9127	bradallen483@hotmail	Brad Allen
3	LANCE ADAMS	42759 Moody RD Richland, OR	541-519-5174	sheepdog@smwdAMAIL	[illegible]
4	HEIDI WLODARCZYK	2401 8th ST, BAKER CITY OR	541-523-5904	comahei@yahoo.com	Heidi Wlodarczyk
5	Logan Allen	48748 McCarty bridge Rd North Powder	541-519-0668	Logan allen@[illegible]	[illegible]
6	Bryson Allen	45043 Pocahontas Rd. Haines, OR 97833	541-519-9443	brysonallen@gmail.com	[illegible]
7	Whitley Allen	45043 Pocahontas Rd Haines, OR 97833	541-962-5975	whitley1011@gmail.com	Whitley Allen
8	[illegible] Bingham	49775 Ellis Road, North Powder OR 97867	541-898-2374	binghamcattle@yahoo.com	[illegible]
9	Jason Williams	65579 Wolf Creek Ln North Powder 97867	541-848-2460		[illegible]
10	Jeff Williams	48857 Hwy 30 North Powder	541-403-1208		[illegible]
11	Jeanette Thompson	48363 Hwy 30 Haines OR	541-856-3765		[illegible]
12	Brent Thompson	48363 Hwy 30 Haines OR	541-856-3765		[illegible]
13	Devon Thompson	36288 Camahan Ln Richland OR 97870	(541)910-[illegible]		[illegible]
14	Brandon Thompson	245 Millie Way Dayville OR 97825	541-792-0186	brandon.e.thompson@[illegible]	[illegible]
15	Charlotte Thompson	48363 Hwy 30 Haines OR	541-856-3305		Charlotte Thompson
16	ERIC DIXON	PO BOX 247 NORTH POWDER, OR 97867	541-519-7970		Eric Dixon
17	Linda [illegible]	425 E St. North Powder	541-709-1045		[illegible]
18	BRYAN EUBANKS	525 3rd st. North Powder	541-898-2164		[illegible]
19	Taylin Espinoza	535 5th St North Powder	541-519-5079		Taylin Espinoza
20	Calvin Tucker	64125 Greiner Ln LaGrande	541-786-8252		[illegible]

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 9 cont.

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Jeff Lathrop	914 South 4th Union	962-4601	jw@oregonwireless.net	[illegible]
2	LEON LUND	10503 W 4th LaGrande	963-7004		[illegible]
3	Jill Billman	534 N 11th St Union	910-8966		Jill Billman
4	RICH WASSON	1002 DOGWOOD ELGIN	962-5489		Richard Wasson
5	Sally Thompson	P.O. Box 4 Elgin	534-5822		Sally Thompson
6	Randy Thompson	P.O Box 4 Elgin	534-5822		Randy Thompson
7	[illegible]	P.O Box 185 North Powder	898-2075		JEFF GEORGE
8	Kelly Seel	49271 Foothill Rd North Powder OR	786-5553	[illegible]	[illegible]
9	[illegible] Williams	65579 Wolf Creek Ln North Powder, Or	541-898-2405		[illegible]
10	Melissa Brown	PO BOX 81 Haines, OR 97833	5415193638		Melissa Brown
11	Emily Bingham	49980 Ellis Road N. Powder OR 97867	541-898-0048		[illegible]
12	Shari Selander	1000 F Street Baker City OR 97814	541-503-7413	sselander@ndninc.org	Shari Selander
13	June Allen	48748 McCarty Bridge R. N. Powder	541-856-3358	Union Co.	[illegible]
14	Justin Bingham	49980 Ellis Rd N. Powder OR 97867	541-898-0048	[illegible]@gmail.com	[illegible]
15	Eric Ashbaker	13851 Loening Ln Haines, OR 97833	5094200579	[illegible]@gmail.com	[illegible]
16	Cynthia Cole	13851 Loening Ln Haines Or 97833	541 969 7247	[illegible]@gmail.com	[illegible]
17	Marji Lind	41090 Schoolhouse Rd. Haines 97833	541-856-3220		[illegible]
18					
19					
20					

Attachment

N5	Glass Hill Coalition (cont.)

Attachment 9 cont

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Chris Arvidson	48387 McCarty Bridge Rd NP Oregon	208 850 8957	chris.arvidson@williams.com	[illegible]
2	Robert Stephens	46457 Stephens Rd Haines Ore	910 0788		Robert D Stephens
3	Roy Tidwell	13596 S. Rock Cr. Ln	519-5659	tidwell10@yahoo.com	[illegible]
4	Ben Tidwell	13596 S. Rock Cr. Ln.	975-4552	btidwell1010@gmail.com	Ben Tidwell
5	Allen Arock	44821 Pocahontas Rd	541-519-8167	allenh978530@yahoo.com	[illegible]
6	Matt Lish	2125 East Street	541-885-0800	N/A	[illegible]
7					

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Josh Anderson	13993 S. Rock Creek Haines, OR 97833	541-805-9650	scout742@yahoo.com	[illegible]
2	Colby Thompson	51608 Bagwell Ln North Powder OR 97867	541-910-0006	TLazyt farm@Gmail.com	[illegible]
3	Delbert Stephens	46226 Rk Crk Tun Rd Haines OR 97833	541-910-7001	Farmer001 @ Gmail	[illegible]
4	Erin Thompson	51608 Bagwell Rd North Powder OR 97867	541-910-0008	ethompson-02@hotmail.com	[illegible]
5					
6					

ATTACHMENT

N5	Glass Hill Coalition (cont.)

Attachment 9 cont.

Glass Hill Coalition Supporters List

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	Name	Address	Phone Number	Email	Signature
1	Richard Huck	512 Division Ave	963-3456	rrhuck [illegible]	Richard Huck
2	Jessica Huck	512 Division Ave, LaGrande.	963.3456	rrhuck@frontier.com	Jessica L. Huck
3					

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	Name	Address	Phone Number	Email	Signature
1	MARK TURLEY	1857 NW SCENIC DR. ALBANY OR	541-619-0819	MARK@ NATIVEGLASS[illegible]	Mark Turley
2					
3					
4					
16					
17					
18					
19					
20					

Sheet1 Sheet2 Sheet3

COMMENT(S)

RESPONSE(S)

T1 **CTUIR (cont.)**

Confederated Tribes *of the*
Umatilla Indian Reservation
Department of Natural Resources
Administration

46411 Timíne Way
Pendleton, OR 97801

www.ctuir.org ericquaempts@ctuir.org
Phone 541-276-3165 Fax: 541-276-3095

March 19, 2015

Boardman to Hemingway Transmission Line Project
P.O. Box 655
Vale, OR 97918

Transmitted electronically to comment@boardmantohemingway.com and rstraub@blm.gov

RE: Boardman to Hemingway Transmission Line Project Draft EIS.

To whom it may concern:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources (DNR) appreciates the opportunity to comment on the Bureau of Land Management (BLM) Draft Environmental Impact Statement and Land Use Plan Amendments for the Boardman to Hemingway Transmission Line Project, DOI-BLM-OR-V000-2012-016-EIS (DEIS). The CTUIR has worked with the BLM on this project for a number of years addressing the cultural resource and treaty rights impacts of the project and remains concerned that some of the alternatives unnecessarily endanger cultural resources and First Foods. T1a The CTUIR DNR is deeply concerned about the Timber Canyon Alternative as this would adversely affect big game, critical sage grouse habitat, and cultural resources.

T1b Based on information available in the DEIS and our meetings, the CTUIR DNR recommends the following alternatives in each Segment.:

Segment 1:
1. The Longhorn Alternative should be selected. The Horn Butte Alternative and the proposed route will impact more cultural and natural resources. Further, the Longhorn Variation will impact more cultural resources and intact habitat.

Segment 2:
2. The proposed route should be selected rather than the Glass Hill Alternative. Both alternatives will have impacts, but the proposed route introduces fewer new effects.

Segment 3:
3. The Flagstaff Alternative should be selected because that it parallels an existing transmission line. As noted above, the Timber Canyon Alternative is the worst possible choice for resource impacts.
4. The proposed route should the selected over the Burnt River Mountain Alternative based on landscape, previous disturbance, and reducing impacts to known cultural resources as well as minimizing effects to big game.

Segment 4:
5. The Tub Mountain Alternative should be selected over the proposed route or Willow Creek Alternative based on proximity to previous development.

Treaty June 9, 1855 ~ Cayuse, Umatilla and Walla Walla Tribes

T1a Comments noted. The Timber Canyon Alternative was re-evaluated for the Final EIS to better identify potential impacts associated with this alternative. This route crosses mixed conifer forest, which also is of particular concern for the Forest Service. The Forest Service expressed concern about loss of forested habitat (and associated effects on wildlife habitat and timber products). In addition, this route is 19 miles longer than other routes in this segment. See Section 2.1.1.3 (Recommended Route-Variation Options) for further detail.

T1b Comments and route preference noted.

Comment(s)

Response(s)

T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
Subject: Boardman to Hemingway Transmission Line Project Draft EIS
March 19, 2015
Page 2 of 5

These alternatives will maximize beneficial uses, reduce degradation, and preserve important aspects of heritage under both Section 106 of the NHPA, 54 USC § 306108, and Section 101 of the National Environmental Policy Act, preserving "important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice[.] 42 USC § 4331(b)(4).

As a procedural matter, the CTUIR will provide sensitive cultural resource information and must be withheld from public release under the National Historic Preservation Act, 54 USC § 307103(a) (formerly 16 USC § 470w-3). That material will be provided to Renee Straub of the BLM in a separate e-mail.

The DNR appreciates that the DEIS addresses First Foods, however the way the DEIS discusses First Foods it appears to limit the application of the concept to plants, leaving out the fish and wildlife CTUIR tribal members rely upon as well. In the Definitions section, First Foods are accurately defined as "Plant and animal resources gathered or cultivated by American Indians for subsistence, economic, medicinal, and ceremonial purposes that have important tribal historical, cultural, and religious value." Page 5-7, line 20-22. However, in the Affected Environment the DEIS states "The one mile analysis area was also used for the analysis of first foods because these resources were analyzed within the context of the vegetation communities." 3-105, line 35 and page 3-106, line 1. This remains true on the following pages when First Foods/Ethnobotanical Resources are lumped together on page 3-121, line 13 as well as the methodology for impacts to vegetation, in Section 3.2.3.6, pages 3-161-191. Our December 4, 2013 comments stated:

> On page 3-212, on line 6, the direct effects of construction, operation and maintenance do not consider the impacts to big game. Is BLM considering the impacts to big game and mitigating for those impacts? The line impacts 82.8 miles of elk winter range. Impacts to elk during the winter in their security habitat through maintenance activities can have immediate and significant impacts to populations. Big game, including elk, mule deer and deer have special significance to the CTUIR as one of our first foods that tribal members rely upon for physical and cultural subsistence. The CTUIR DNR hopes that BLM incorporates into the analysis avoidance and mitigation of impacts to big game habitat. Please explain how BLM addresses direct, indirect and cumulative impacts to big game.

T1c The oversight omitting big game and other fish and wildlife populations from the analysis of the impacts to First Foods fails to acknowledge the significance of fish, wildlife and big game to the CTUIR and tribal members. Please include references to the significance of big game as a tribal First Food throughout the Big Game section starting on page 3-239 similar to the language contained in the First Foods/Ethnobotanical section. The section discussing Tribal Wildlife Concerns on page 3-240, line 12-17 should be expanded to identify the significance of big game as one of the First Foods but the significance of fish and other wildlife should also include tribal

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T1c Comment noted. As requested, discussions of traditional foods resources have been added to Sections 3.2.3, 3.2.4, 3.2.5, and 3.2.13.

COMMENT(S)

RESPONSE(S)

T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
Subject: Boardman to Hemingway Transmission Line Project Draft EIS
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concerns. If BLM needs assistance with the revisions to this language, the CTUIR can provide it at a later date.

T1d

The potential impact of the line to big game is highlighted in at least one alternative that has specific, direct, broad range impacts on big game, big game winter range and other wildlife habitat. The Timber Canyon Alternative is the route which is the least consistent with the protection of big game habitat. The alternative crosses approximately 25 miles of elk summer range habitat, approximately 35 miles of Elk Winter Range habitat, approximately 30 miles of mule deer winter range, approximately 27 miles of sage grouse general habitat and is on the border of approximately 30 miles of sage grouse priority/core habitat. No alternative has impacts as profound as the Timber Canyon Alternative. This alternative should not be chosen.

T1e

The DEIS does an inadequate job addressing how impacts to big game will be mitigated. Direct effects of construction will impact big game populations, but so will operation and maintenance activities. Any new roads should be restricted access to prevent additional public use and disturbance of wildlife, including both winter and summer range habitat.

Cultural Resources

This undertaking will adversely affect historic properties of religious and cultural significance to the CTUIR. The BLM has the opportunity to reduce those effects through the selection of appropriate alternatives.

The DNR appreciates the BLM cultural resource "sensitivity" ranking system and the explanation of it contained on page 3-804-5. However, it would have been preferable if BLM had worked with DNR in the development of the ranking system. As the DEIS notes, some sites are more sensitive than others, i.e. some sites "have strong cultural values to tribes and other

T1f

ethnic groups." The CTUIR would have liked to have engaged in discussion of site type and sensitivity. For example, this would have changed the ranking of rock images and rock features, which are properties of religious and cultural significance or TCPs. The CTUIR DNR disagrees with the ranking of lithic scatters without features or projectile points on the surface as low value. Until the site has been formally evaluated, one cannot know whether it has datable material or not. Further, the definitions are vague and it is unclear what exactly is included in "Task-specific sites", which BLM assigned low-moderate sensitivity. If the specific task is sacred in nature, than surely it is more sensitive than that. Note that in the ranking, non-eligible historic trails are more sensitive than lithic scatters, quarries, and task-specific sites. We do not understand how the BLM arrived at that conclusion. Finally, the ranking of Paleoindian sites as the most significant type needs more explanation. Has BLM assessed the number of sites documented dating to various time periods within the Plateau and Great Basin?

T1g

The ranking system fails to take into account existing impacts, such as existing transmission lines and the route of Interstate 84. These are critical when assessing affects to integrity of setting, feeling, and association. If there already is a transmission line within the viewshed of a

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T1d

Route preference noted. The potential effects of the B2H Project on big game species, is analyzed for all alternative routes considered (refer to Section 3.2.4.5 in the Final EIS). The Applicant has committed to design features and site-specific selective mitigation measures designed to minimize anticipated B2H Project effects to big game and other wildlife, including seasonal and spatial restrictions, creation of a Plan of Development that includes a Biological Resources Conservation Plan, and limiting new or improved accessibility to sensitive habitat.

T1e

Comment noted. The Applicant has committed to design features and site-specific selective mitigation measures designed to minimize anticipated B2H Project effects to big game and other wildlife, including seasonal and spatial restrictions, creation of a Plan of Development that includes a Biological Resources Conservation Plan, and limiting new or improved accessibility to sensitive habitat (refer to Section 3.2.4.5 in the Final EIS).

T1f

Comment noted. Site sensitivity rankings and descriptions have been modified based upon specific comments received from the CTUIR and were discussed during government-to-government consultation. Please refer to BLM Team internal meetings: Wings and Roots, October 21, 2015 and November 18, 2015.

T1g

See next page for response to T1g.

COMMENT(S)

RESPONSE(S)

T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
Subject: Boardman to Hemingway Transmission Line Project Draft EIS
March 19, 2015
Page 4 of 5

T1g

given historic property, the effects of another transmission line in the same viewshed is less than if the viewshed were intact. When considering the RLS data, the BLM determined to rank impacts from 0-250 feet as most severe, 250-750 feet as medium severe, and 750-5 miles as most severe. Speaking relatively, that is of course correct. However, the break at 750 feet is not intuitive. Please explain how this number was arrived at. BLM decided the overall assessment area is 26,400 feet. BLM put 1% of that area in the most severe category, 2% in medium, and 97% in least severe. The towers themselves will be tall and highly visible from quite a distance (presumably there's been an analysis as to exactly how far). We understand that the severity of impact will change over distance, but these categories appear arbitrary and do not seem reflective of actual impact.

T1h

Chapter 3.2.8 discusses the PA and the cultural resource work that has been completed and will happen. The PA has not been signed. Based on meetings with the BLM, it appears to the DNR that aspects of the cultural resource work discussed in the EIS and PA are not being completed as outlined in the documents. The BLM is making agreements to move aspects of the reconnaissance level survey (RLS) to the intensive level survey (ILS). Please ensure that the EIS accurately reflects the work that is being done. In addition, the DNR expressed concerns about what will be addressed in the ILS and what will be addressed in the RLS; those concerns were not resolved prior to the issuance of the DEIS. Responses to cultural resource concerns have been slow; and it remains unclear how many issues have been or will be resolved prior to finalization of the EIS. This uncertainty prevents an adequate review of these documents.

As noted above, DNR will provide sensitive cultural resource information that is exempt from the Freedom of Information Act release to Renee Straub in a separate e-mail communication. This identifies specific site impacts of the alternatives.

T1i

I refer the BLM back to CTUIR comments on the subject of the 15% sample and whether or not it is truly random. A random sample is not stratified by landownership. The EIS should accurately reflect what the BLM did to consider impacts to our cultural and historic heritage. The CTUIR has provided many comments over the last seven years meeting and working with Idaho Power and BLM. We expect that those comments we provided have been and will be considered in the final alternative selection.

T1j

The Cultural Resources section ends with a list of mitigation measures, Section 3.2.8.9. None of these mitigation measures will address adverse effects to historic properties of religious and cultural significance to the CTUIR. This list includes preparation of National Register nominations. Evaluating sites for their eligibility for inclusion in the National Register is not mitigation; it is part of the section 106 process. It also lists "partnerships and funding for public archaeology projects." The CTUIR is opposed for excavating archaeological sites for recreational purposes. We provided many comments on this list in the PA in August 2012. In the August 2013 and January 2014 version, it was removed altogether. In the September 2014 version it was back. Please review our comments, address them with us, and change or remove the list.

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T1g

The methodology was not designed to account for existing impacts along a given alternative route. Impacts associated with existing infrastructure are identified and discussed qualitatively in the cultural resources analysis.

These distance criteria are not tied specifically to the Reconnaissance Level Survey (RLS) data, these criteria are applied to all known sites within the 4 -mile-wide Class I literature review study corridor for the purposes of the EIS analysis. The revised analysis methodology has incorporated a fourth distance zone in order to further refine distance as a variable in the model. Revised distance zones are as follows: 0 to 250 feet; 251 to 750 feet; 751 to 1,000 feet; and 1,000 feet to 2 miles.

The distance criteria are representative of distance zones established for the purposes of GIS analysis only. These distances in-and-of-themselves are not reflective of specific impacts on sites, they are simply a tool for use in the comparison of alternatives relative to the proximity of known sites to the centerline. When the distance and site sensitivity variables are combined in the model the resulting calculations can be used to identify potential initial impacts on cultural resources by alternative route.

T1h

The EIS references all studies conducted that are pertinent to the NEPA process. Studies required as part of the EFSC process in Oregon or the Section 106 process may inform, but are not required under NEPA. Though often conducted parallel to NEPA these are separate actions required under separate laws. The Programmatic Agreement directs how Section 106 will be carried out (refer to Appendix I).

T1i

Inability to access all private lands for survey made a completely random survey impractical. Reference to the 15 percent survey will be referred to as a 15 percent survey.

T1j

Measures described in the EIS represent typical approaches to mitigation; however, site-specific mitigation will be developed as part of the Historic Properties Management Plan in compliance with Section 106 and in consultation with the tribes and consulting parties and in accordance with the Programmatic Agreement developed for the B2H Project.

COMMENT(S)

RESPONSE(S)

T1 **CTUIR (cont.)**

CTUIR DNR Letter to BLM
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T1k Finally, in our December 4, 2013 comments the CTUIR requested that the term "rock image" be used rather than "rock art." Please replace the phrase "rock art" with "rock image" on pages 3-769 line 18, and 3-796 lines 3 and 10.

If you have any further questions, please contact Audie Huber, DNR Intergovernmental Affairs Manager at 541-429-7228.

Respectfully,

Eric Quaempts, Director
Department of Natural Resources

Cc: Renee Straub, BLM [with enclosure]

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T1k The term "Rock Art" has been replaced as suggested.

UNION COUNTY
BOARD OF COMMISSIONERS

Steve McClure Commissioner
Jack Howard, Commissioner
Donna Beverage, Commissioner

Shelley Burgess, Administrative Officer

1106 K Avenue La Grande, OR 97850 PHONE (541)963-1001 FAX (541)963-1079 TTY 1-800-735-290

November 21, 2018

Kellen Tardaewether
Senior Siting Analysis
Energy Facility Siting Division
Oregon Department of Energy
550 Capitol St. NE, 1st Floor
Salem, OR 97301

RE: B2H Complete ASC Comments

Dear Ms. Tardaewether:

When Idaho Power Company (IPC) first contacted Union County about the B2H Project proposal coming through Union County, the County requested IPC to stay out of the cultivated agricultural lands and out of the view shed of the City of La Grande. In IPC's application for Site Certificate, now deemed complete by staff to the Oregon Energy Facility Siting Council, IPC has identified a proposed route that stays out of cultivated agricultural lands of Union County but does not avoid the City of La Grande's view shed. However, IPC has also identified an alternative route near the City of La Grande, the Morgan Lake Alternative route, that does not adversely impact the City of La Grande's view shed to the degree the proposed route does. The City of La Grande strongly encourages IPC to use the Morgan Lake Alternative route, if approved, and the County would support this route as well.

Union County has previously raised several concerns about the B2H Project in review of IPC's application for site certificate to include missing information in the form of site plans, and studies that IPC has identified conducting at a later date and as Land Use Conditions to satisfy review standards raised by Union County after IPC would receive site certificate approval. Union County re-raises those comments and concerns (not attached but part of the record) at this time from the record of Union County's review of IPC's preliminary application for site certificate. Most every proposed Land Use Condition in IPC's complete application for site certificate identifies that IPC or the site certificate holder will comply with requirements identified by Union County without providing any evidence to the current record that IPC could comply with identified requirements. How the hearings officer for the Energy Facility Siting Council and ODOE staff will develop findings for the Energy Facility Siting Council to make a final decision that IPC has satisfied requirements identified by Union County will be interesting when there is no evidence in the existing record.

Union County's hope was to have a greater level of detail for the B2H Project impacts to roads and the degree of impact, weed management, aggregate sources, batch plants etc. However, since ODOE staff has declared IPC's Application for Site Certificate complete Union County will have to see if these concerns are addressed at a later date. Union

County will continue discussions with IPC staff about impacts from all aspects of the B2H Project and how to best minimize those impacts.

If you have further questions please contact me.

Sincerely,

Scott Hartell

Scott Hartell
Planning Director
541-963-1014

- Socioeconomics
- Technical and other considerations
  - Military operations
  - Constructability
  - RMP and USFS plan conformance

The Environmentally and Agency Preferred Alternative is described below.

In the Morrow-Umatilla County Segment, the Longhorn Variation is the Environmentally and Agency Preferred Alternative. The Longhorn Variation is 16 miles and the Proposed Action is 34.1 miles. When compared to the Proposed Action, the Longhorn Variation would result in less impact and disturbance to vegetation, streams, and irrigated agriculture. The Longhorn Variation would disturb an acre of riparian habitat during construction and operation, have 13 stream crossings, and disturb 21 acres of irrigated agriculture during construction and 2 acres during operation. By comparison, the Proposed Action would disturb 13 acres of riparian habitat during construction and 2 acres during operation, have 103 stream crossings, and disturb 90 acres of irrigated agriculture during construction and 12 acres during operation. Agency considerations include local agricultural land use and military operations at the Naval Weapons Systems Training Facility Boardman. The Longhorn Variation would have fewer impacts on agricultural operations than either the Proposed Action or the Horn Butte or Longhorn Alternatives. The U.S. Navy prefers the Proposed Action or Horn Butte Alternative because those would have less effect on military operations, but it sees the Longhorn Variation as preferable to the Longhorn Alternative.

In the Blue Mountains Segment, the Proposed Action is the Environmentally and Agency Preferred Alternative primarily because the Proposed Action would disturb fewer acres of winter range and cause less vegetation disturbance. When compared to the Glass Hill Alternative, the Proposed Action would disturb 19 fewer acres of winter range during construction and 13 fewer acres during operation. Agency considerations include the closer alignment of the Proposed Action to an existing transmission line for 3 of the 7.5 miles and avoidance of effects on a relatively undisturbed landscape.

In the Baker Valley Segment, the Proposed Action, Flagstaff Alternative, and Burnt River Mountain Alternative are the Environmentally and Agency Preferred Alternatives primarily because these alternatives would have less impact on Greater Sage-Grouse habitat. When compared with the Proposed Action, the Flagstaff and Burnt River Mountain Alternatives would disturb 381 fewer acres of Greater Sage-Grouse preliminary priority habitat during construction and 87 fewer acres during operation. These alternatives would also disturb 68 fewer acres of Greater Sage-Grouse preliminary general habitat during construction and 11 fewer acres during operation. The longer Timber Canyon Alternative would have greater impacts on fish, vegetation, and wildlife resources than the Proposed Action. Agency considerations include the need for designation of a new utility corridor for the Timber Canyon Alternative, and closer alignment of the Flagstaff Alternative with existing transmission lines and other rights-of-way than the Proposed Action.

Chapter 2
Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Applicant's Proposed Action to construct, operate, and maintain a 500-kV transmission line and ancillary facilities, including a description of right-of-way acquisition, transmission-line components, substations, communication system, access roads, geotechnical investigation required to inform the design and engineering of the B2H Project facilities, and construction activities to assist in understanding the types and extent of environmental effects that could result from the proposed B2H Project.

Also described in this chapter are the range of reasonable alternatives for the Proposed Action identified for detailed analysis, as required by Section 102(2)(E) of the NEPA (40 CFR 1502.14), including the No Action Alternative, which is the continuation of the existing condition or management and serves as a baseline for comparing the environmental effects of the B2H Project alternatives and alternatives considered but eliminated from detailed analysis. In addition, described are the approach used to conduct the process of analyzing and comparing the alternatives; results of the comparison of alternatives, including a description of the environmentally preferable action alternative that emerged from the analyses; description of the Applicant's Proposed Action Alternative route; and description of the Agency Preferred Alternative.

2.1.1 Summary of Changes from the Draft Environmental Impact Statement

Between the Draft EIS and Final EIS, revisions were made to the Applicant's Proposed Action, route-variation options were developed to be located closer to (a minimum of 250 feet from) existing transmission lines, and localized route-variation options were developed in some of the segments. These include the following:

- The Applicant changed the northern terminus of the Proposed Action from the proposed Grassland or proposed Horn Butte Substation to the proposed Longhorn Substation and proposes to route the 500-kV transmission line along the west side of Bombing Range Road, which is on the NWSTF Boardman along the west side of the eastern boundary of the military facility (Section 2.1.1.1), to allow for construction of the proposed 500-kV line. A portion of an existing BPA 69-kV transmission line displaced by the 500-kV transmission line would have to be removed.
- The BLM requested colocation of the Draft EIS Agency Preferred Alternative route for the proposed transmission line closer to existing transmission lines (Section 2.1.1.2).
- Localized route-variation options were developed (Section 2.1.1.3) based on comments received between the Draft EIS and Final EIS.

As stated above, 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 (Segment 1) is selected, the 69-kV line 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. This additional action is addressed in Section 2.5.2.1 and the potential effects of this action are reported throughout Chapter 3.

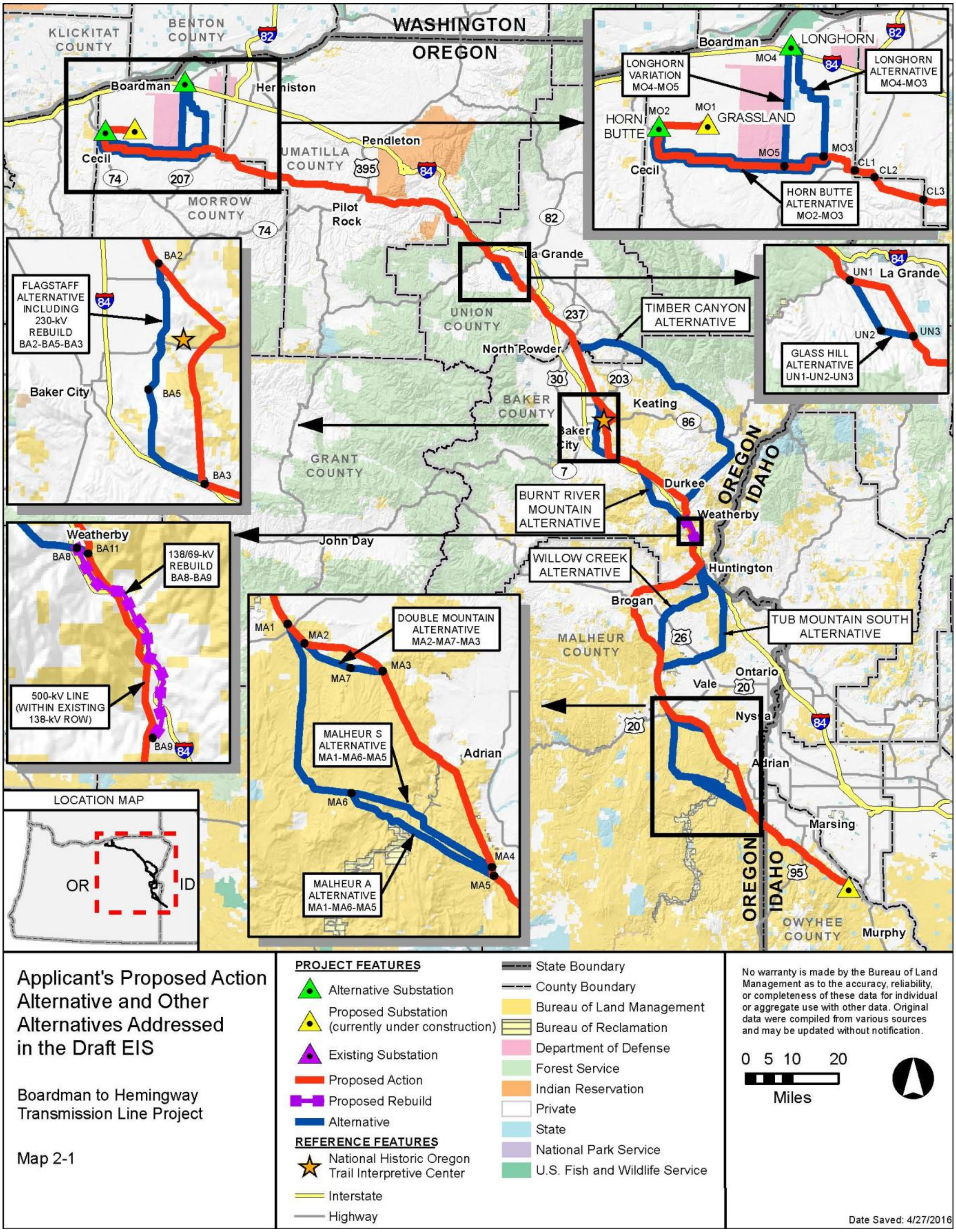
These revisions and route-variation options are described below. The alternative routes addressed in the Draft EIS are shown on Map 2-1, and the alternative routes addressed in this Final EIS are shown on Maps 2-2a and 2-2b.

2.1.1.1 Change in Applicant's Proposed Action

In order for the B2H Project to meet its objective of adding approximately 1,000 megawatts of bi-directional capacity between the Pacific Northwest and Intermountain West regions, the point of interconnection at the northern terminus must provide sufficient capacity to (1) transfer an additional 1,050 MW of power from the BPA 500-kV transmission system in the Pacific Northwest west-to-east across the Idaho-Northwest transmission path, (2) transfer an additional 1,000 MW of power east-to-west across the Idaho-Northwest transmission path, and (3) allow for actual power flows on the B2H Project transmission line of up to approximately 1,500 MW, accounting for variations in actual power flows of the various transmission lines comprising the Idaho-Northwest transmission path.

When Idaho Power began the federal permitting process for the B2H Project in 2007, other transmission development projects were being proposed in the Pacific Northwest that influenced Idaho Power's northern terminus location options for the B2H Project; in particular, Portland General Electric's (PGE) Cascade Crossing 500-kV Project. In 2008, the Applicant and PGE executed a Memorandum of Understanding concerning Boardman area transmission development, with the intent of sharing development plans and developing facilities collaboratively to assist each company in fulfilling their respective service and system-reliability obligations. The proposed Grassland Substation was contemplated as an interconnection point between the two projects that could help each company with their respective project objectives (Map 2-1). The proposed Horn Butte Substation was introduced as an alternative location to connect to the Cascade Crossing 500-kV Project.

However, since the NEPA process was initiated for the B2H Project, the transmission-development landscape has changed. Several of the development projects under consideration during the time of original application subsequently have been cancelled. Notably, in 2013, PGE indefinitely suspended the Cascade Crossing Project.


WASHINGTON
OREGON
KLICKITAT COUNTY
BENTON COUNTY
Boardman
Hermiston
Cecil
UMATILLA COUNTY
MORROW COUNTY
Pendleton
Pilot Rock
La Grande
UNION COUNTY
North Powder
BAKER COUNTY
Baker City
Keating
GRANT COUNTY
Durkee
Weatherby
John Day
Huntington
Brogan
MALHEUR COUNTY
Ontario
Vale
Nyssa
Adrian
Marsing
OWYHEE COUNTY
Murphy
OREGON
IDAHO
LONGHORN
LONGHORN VARIATION MO4-MO5
LONGHORN ALTERNATIVE MO4-MO3
HORN BUTTE
GRASSLAND
HORN BUTTE ALTERNATIVE MO2-MO3
TIMBER CANYON ALTERNATIVE
GLASS HILL ALTERNATIVE UN1-UN2-UN3
FLAGSTAFF ALTERNATIVE INCLUDING 230-kV REBUILD BA2-BA5-BA3
BURNT RIVER MOUNTAIN ALTERNATIVE
WILLOW CREEK ALTERNATIVE
TUB MOUNTAIN SOUTH ALTERNATIVE
138/69-kV REBUILD BA8-BA9
500-kV LINE (WITHIN EXISTING 138-kV ROW)
DOUBLE MOUNTAIN ALTERNATIVE MA2-MA7-MA3
MALHEUR S ALTERNATIVE MA1-MA6-MA5
MALHEUR A ALTERNATIVE MA1-MA6-MA5
LOCATION MAP
OR
ID
Applicant's Proposed Action Alternative and Other Alternatives Addressed in the Draft EIS
Boardman to Hemingway Transmission Line Project
Map 2-1
PROJECT FEATURES
Alternative Substation
Proposed Substation (currently under construction)
Existing Substation
Proposed Action
Proposed Rebuild
Alternative
REFERENCE FEATURES
National Historic Oregon Trail Interpretive Center
Interstate
Highway
State Boundary
County Boundary
Bureau of Land Management
Bureau of Reclamation
Department of Defense
Forest Service
Indian Reservation
Private
State
National Park Service
U.S. Fish and Wildlife Service
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.
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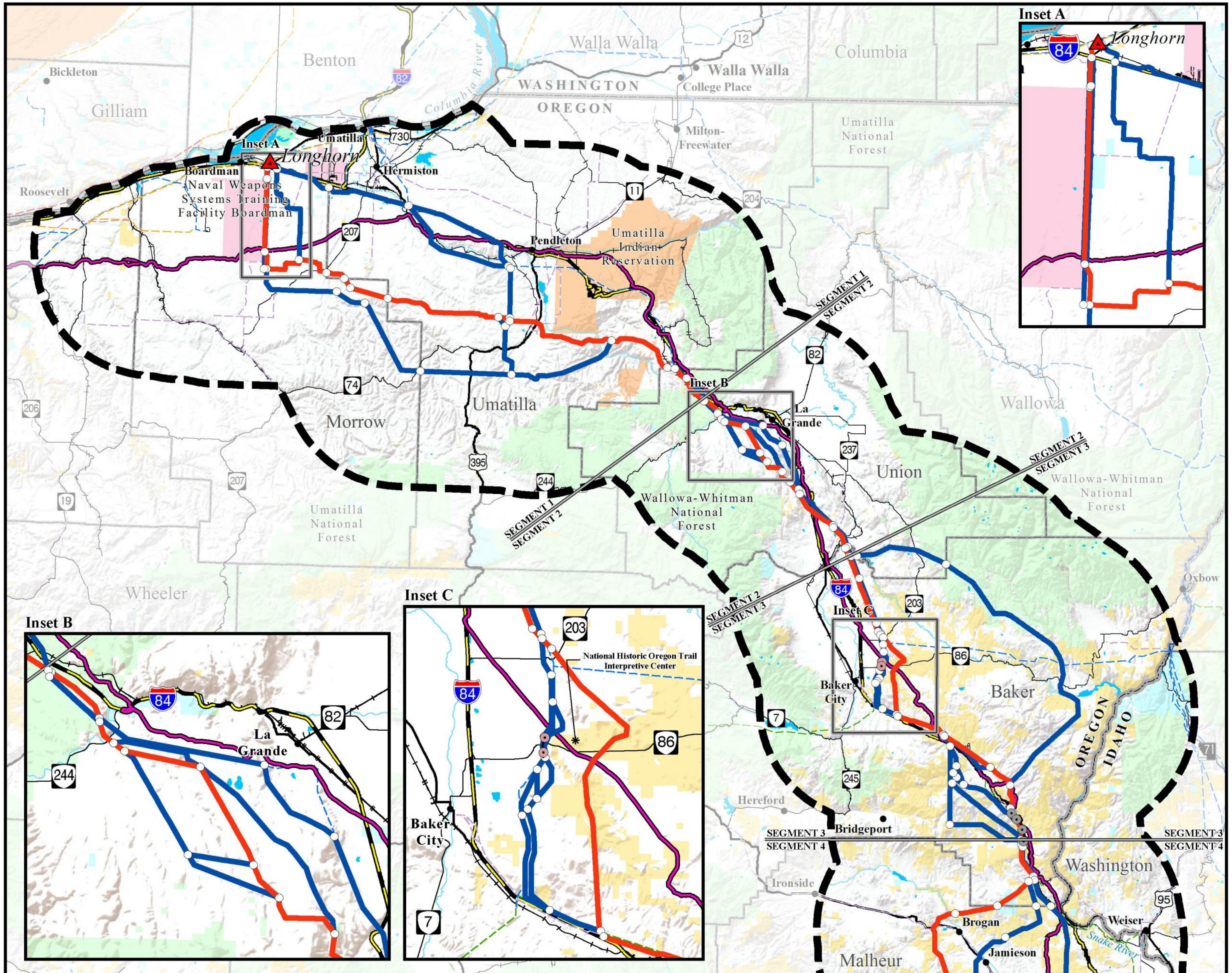

Map 2-2a

Alternative Routes Analyzed for the Final EIS (Northern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

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

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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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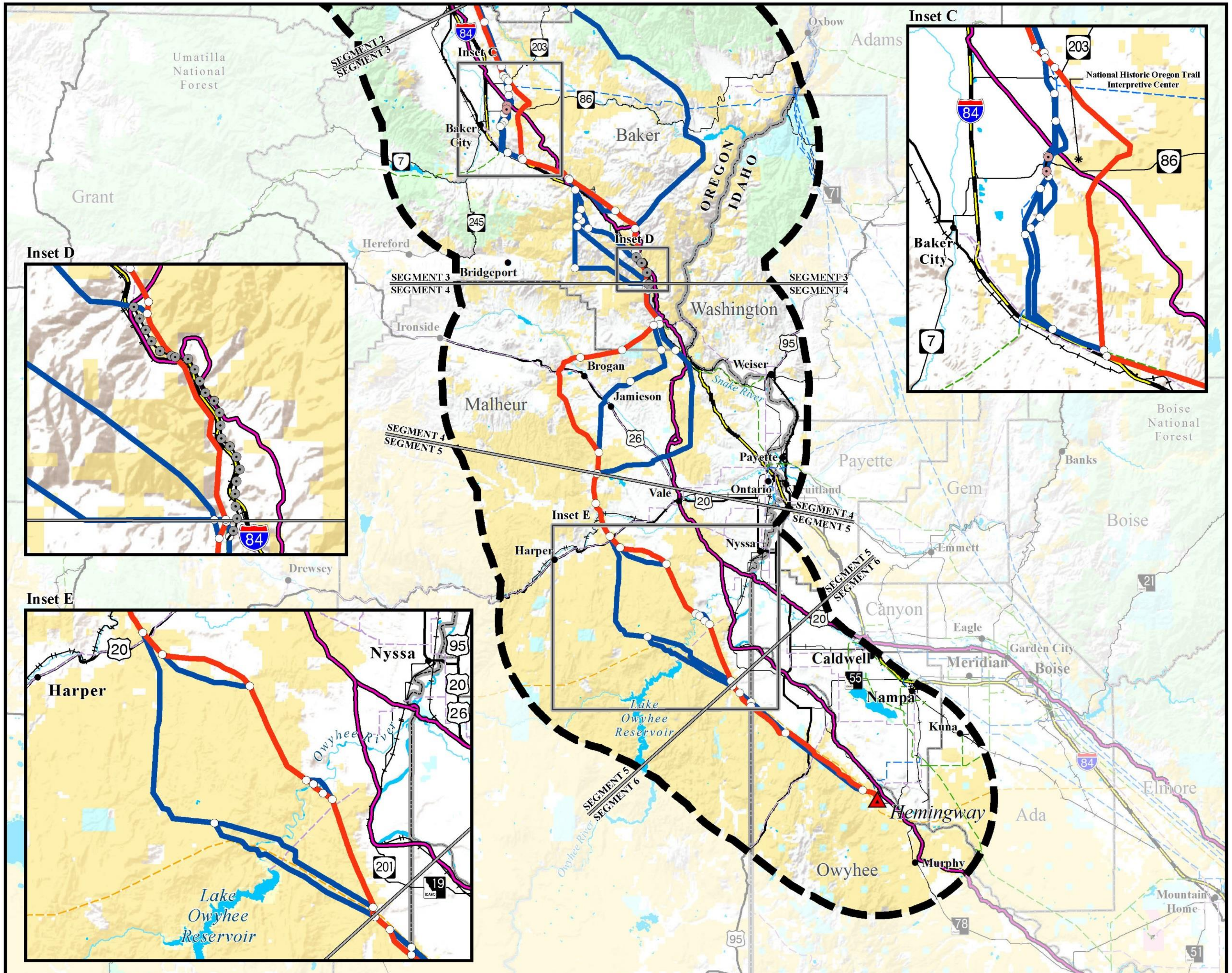

Map 2-2b

Alternative Routes Analyzed for the Final EIS (Southern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

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

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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.
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- 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
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In the absence of the Cascade Crossing Project, neither the proposed Grassland Substation nor alternative Horn Butte Substation would provide the required approximate 1,000 MW of bi-directional capacity and up to 1,500 MW of actual power-flow capability. Therefore, the proposed Grassland and Horn Butte substations and alternative routes to these substations as set forth in the B2H Project Draft EIS, do not meet the B2H Project objectives. The Applicant is now proposing the remaining Longhorn Substation, which was analyzed in the Draft EIS, as the northern terminus.

The Applicant's objective of terminating at the Longhorn Substation is based on more than electrical connectivity. The site of the Longhorn Substation provides flexibility for commercially advantageous development opportunities. The Longhorn Substation is strategically located near existing generation sources that comprise potential transmission customers or generator service providers for the permitting partners.

In the Draft EIS for the B2H Project, the BLM considered four alternative route-variation options near the NWSTF Boardman property: (1) Grassland Substation route; (2) Horn Butte Substation route; 3) Longhorn Alternative; and (4) Longhorn Variation (on the east side of Bombing Range Road). In comments on the Draft EIS, local landowners, local governments, and the Oregon Department of Agriculture criticized the Longhorn Alternative and Longhorn Variation, expressing concern about the potential impacts on irrigated agriculture and the related economic effects. A number of commenters advocated for a route-variation option on the west side of Bombing Range Road, which would be on the eastern border of the NWSTF Boardman, federal land withdrawn for military use.

The Applicant submitted an application, dated June 22, 2015, to the Navy requesting an easement that would repurpose the area along the eastern boundary of the NWSTF Boardman on the west side of Bombing Range Road, currently occupied by a 69-kV transmission line, for the construction, operation, and maintenance of the B2H Project transmission line. BPA, a permitting partner on the B2H Project, owns and operates the 69-kV transmission line (which serves Columbia Basin Electric Cooperative in southern Morrow County) pursuant to a use agreement with the Navy. The BPA would cooperate with the Applicant to terminate its existing use agreement with the Navy and remove the 69-kV transmission line and construct the B2H Project in place of the 69-kV transmission line. The location and width of the Idaho Power easement would be the same as that provided in BPA's existing use agreement for the 69-kV transmission line; that is, a 90-foot-wide use area. The Applicant is proposing a modified transmission-line structure type, which would be no taller than 100 feet to mitigate potential impacts; that is, minimize interference with the military operations of the NWSTF Boardman. Umatilla Electric Cooperative (UEC), which owns and operates a 115-kV transmission line on private property on the east side of Bombing Range Road, would cooperate with BPA to help BPA continue to provide electrical service to its customers served by the displaced 69-kV transmission line. This is considered a connected action under the NEPA. Description of the 69-kV line relocation is presented in Section 2.5.2.1 and analysis of the action is included throughout Chapter 3.

The route-variation option west of Bombing Range Road was not an alternative in the Draft EIS, but is within the study corridor included in the Draft EIS affected environment sections; therefore, the EIS does not require supplementation. It has been added as the northern portion of the Applicant's

Proposed Action Alternative route. Map 2-3 shows the Applicant's revised Proposed Action in the northern portion of Segment 1.

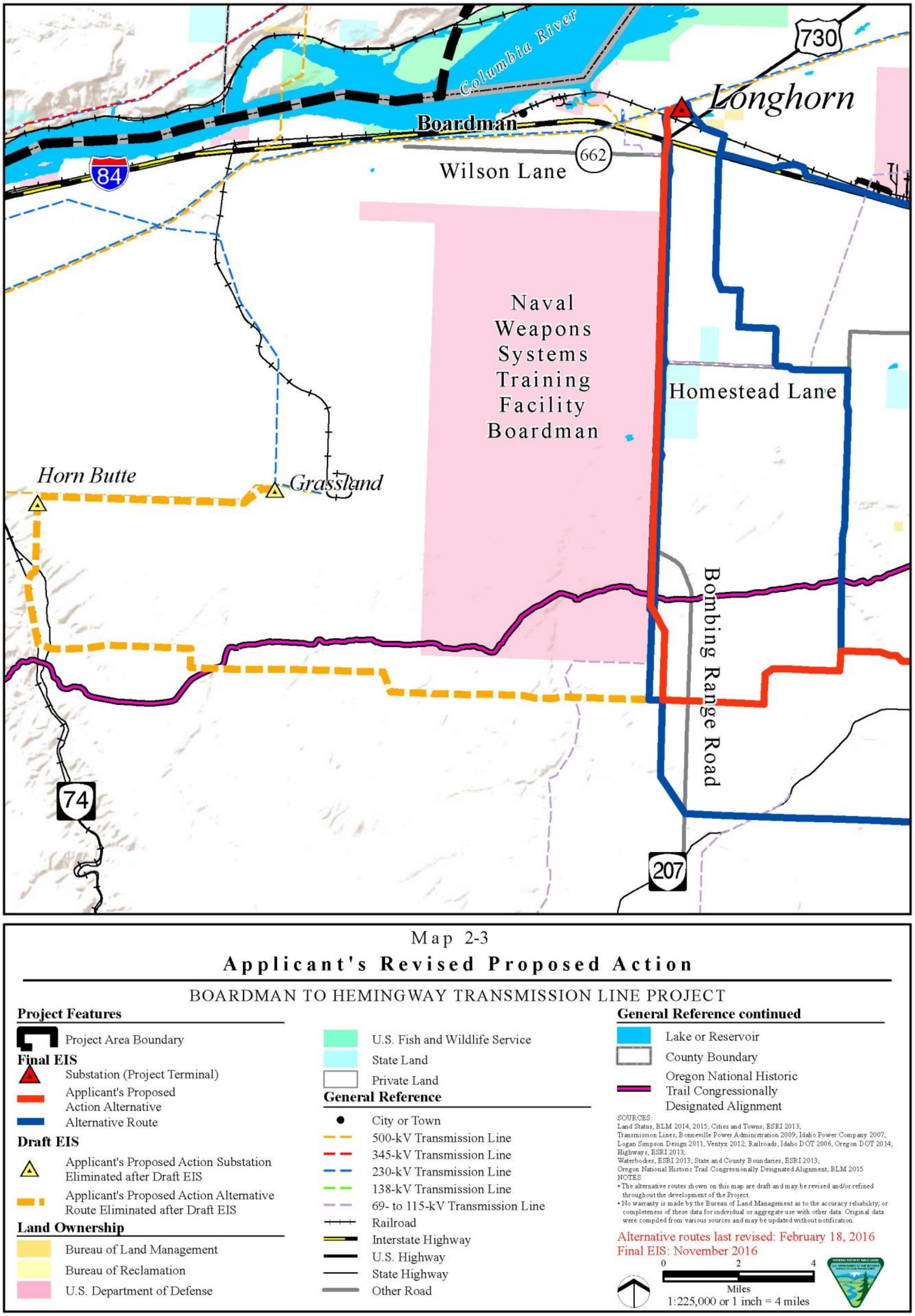
2.1.1.2 Colocation of Transmission Lines

The Draft EIS presented alternative routes for the B2H Project that were sited with a separation distance of approximately 1,500 feet, where feasible, from existing transmission lines. Between the Draft EIS and Final EIS, the BLM requested that the Draft EIS Agency Preferred Alternative route be colocated closer to existing transmission lines. This section explains the background for establishing the initial 1,500-foot separation and the reason the BLM requested the reduction in the separation distance. Maps 2-4a and 2-4b show the areas where colocated route variations were developed.

In recent decades, significant transmission-line outages resulted in increased regulation aimed at the operation, physical security, and overall reliability of the nation's transmission systems. The FERC was given the mandate by Congress to oversee that mandatory reliability standards are implemented. Under the direction of the FERC, the NERC implemented and enforces more than 100 standards to promote reliability. Also, NERC has authority over eight regional coordinating councils to oversee system reliability in each region. The Western Electricity Coordinating Council is the regional coordinating council responsible for overseeing the Western Interconnection (i.e., electrical grid in the western U.S.) (and the immediate regulatory body under which the Applicant must operate). The NERC and Western Electricity Coordinating Council standards and criteria require transmission providers to meet certain system-performance requirements during outages of multiple transmission line and require risk assessments for impacts on the system due to extreme events, such as loss of multiple transmission lines and entire transmission corridors.

Right-of-way and transmission-line-separation distances[1] for all transmission lines (existing and proposed) in the U.S. should comply with NERC reliability standards. Transmission lines in the Western Electricity Coordinating Council system also are required to comply with Western Electricity Coordinating Council reliability criteria.

[1]"Separation distance" refers to the minimum separation between the centerline of one transmission line structure and the centerline of an adjacent centerline of an adjacent transmission line structure where multiple transmission lines follow parallel routes and are aligned structure to structure.



Map 2-3
Applicant's Revised Proposed Action

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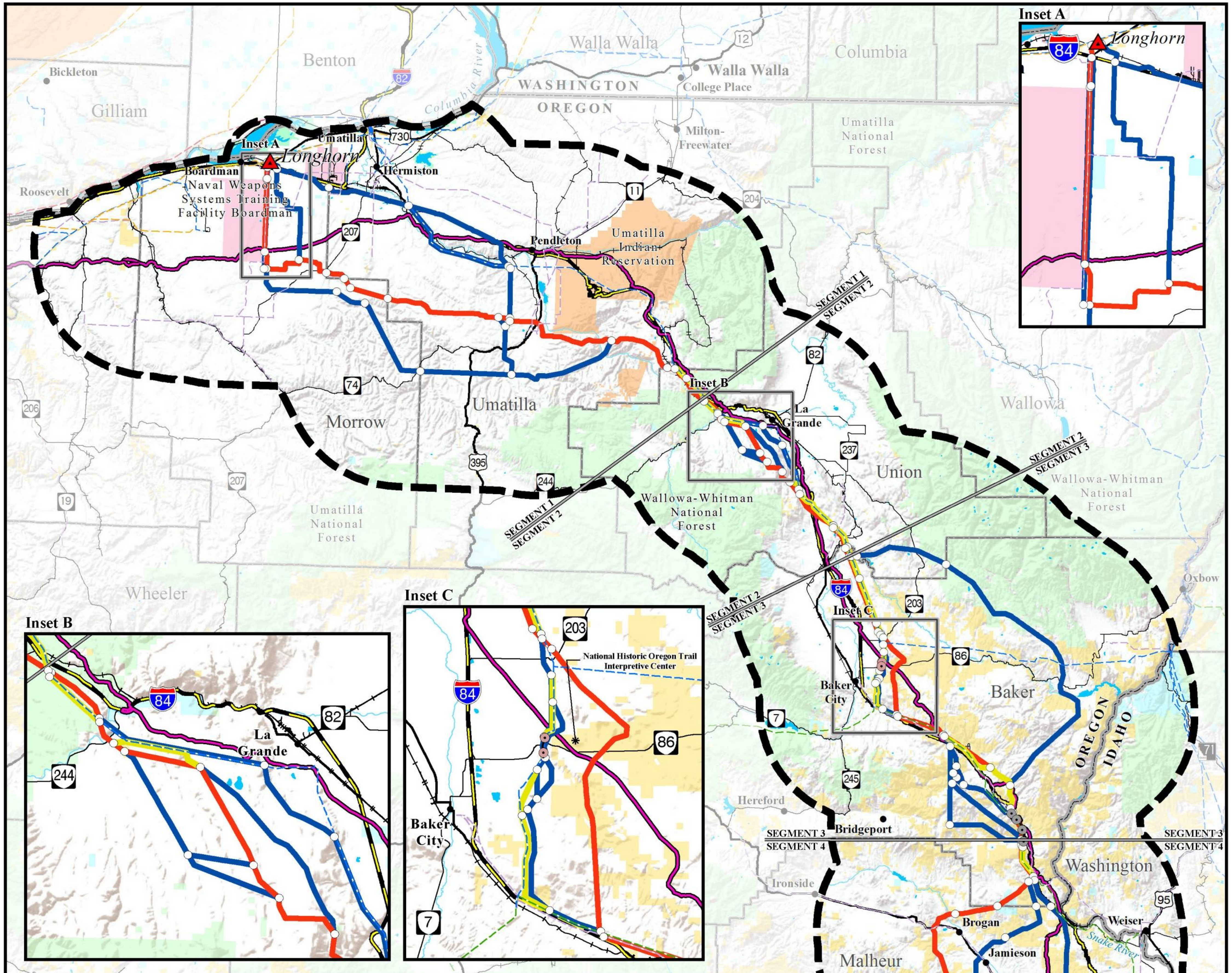

Map 2-4a

Colocation Variations (Northern Area)

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

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

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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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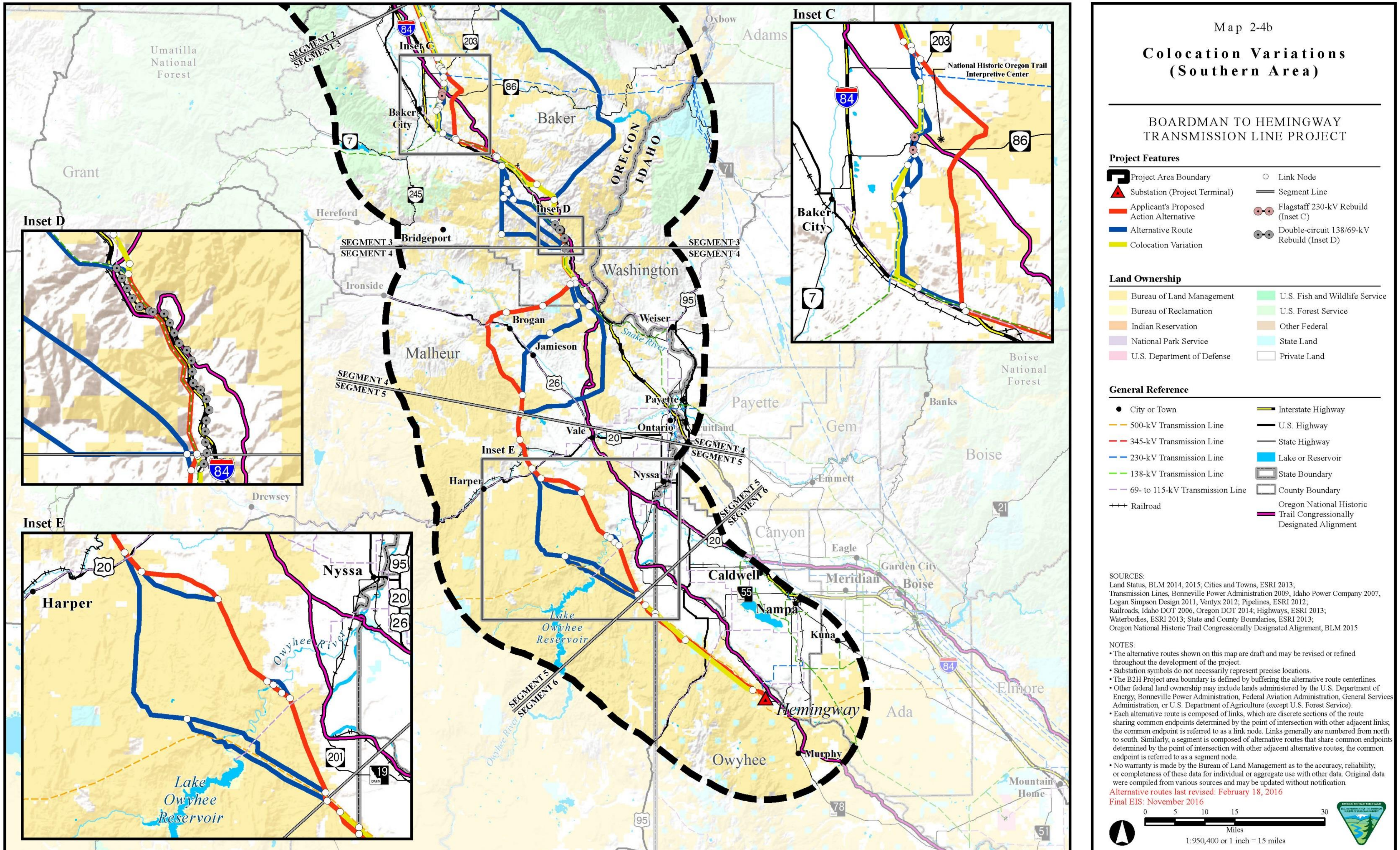
Map 2-4b
Colocation Variations (Southern Area)
BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT
Project Features
Project Area Boundary
Substation (Project Terminal)
Applicant's Proposed Action Alternative
Alternative Route
Colocation Variation
Link Node
Segment Line
Flagstaff 230-kV Rebuild (Inset C)
Double-circuit 138/69-kV Rebuild (Inset D)
Land Ownership
Bureau of Land Management
Bureau of Reclamation
Indian Reservation
National Park Service
U.S. Department of Defense
U.S. Fish and Wildlife Service
U.S. Forest Service
Other Federal
State Land
Private Land
General Reference
City or Town
500-kV Transmission Line
345-kV Transmission Line
230-kV Transmission Line
138-kV Transmission Line
69- to 115-kV Transmission Line
Railroad
Interstate Highway
U.S. Highway
State Highway
Lake or Reservoir
State Boundary
County Boundary
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.
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Miles
1:950,400 or 1 inch = 15 miles
Inset C
Inset D
Inset E
National Historic Oregon Trail Interpretive Center
Baker City
Umatilla National Forest
Grant
Baker
Malheur
Washington
Payette
Gem
Boise
Canyon
Ada
Owyhee
Elmore
Adams
Boise National Forest
OREGON
IDAHO
SEGMENT 2
SEGMENT 3
SEGMENT 4
SEGMENT 5
SEGMENT 6
Oxbow
Hereford
Bridgeport
Ironside
Brogan
Jamieson
Weiser
Payette
Ontario
Fruitland
Vale
Harper
Nyssa
Drewsey
Emmett
Banks
Eagle
Garden City
Meridian
Caldwell
Nampa
Kuna
Hemingway
Murphy
Mountain Home
Snake River
Owyhee River
Lake Owyhee Reservoir

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The Western Electricity Coordinating Council reliability criteria recognize the unique nature of the Western Electricity Coordinating Council system, where there are several instances of multiple long-distance transmission lines running parallel within a corridor and transferring power from remote generation locations to distant load centers. This differs from some other interconnections in the U.S. where load centers are dispersed between generation sources and transmission lines are relatively short. These long-distance transmission lines typically are 345-kV or greater and carry a large amount of power (often referred to as "bulk" power). The presence of long-distance transmission lines implies less redundancy in the system because these long-distance transmission lines could significantly affect the reliability of the power system and could result in cascading outages and loss of load. Therefore, more safeguards against outage of these lines—such as robust construction and frequent maintenance, comprehensive and failsafe protection systems, and outage mitigation methods (such as remedial action schemes)—are designed and implemented throughout the Western Electricity Coordinating Council system.

In 2008, the Western Electricity Coordinating Council established system-performance criteria that required all transmission lines within a common corridor to be subject to performance requirements imposed by the NERC. Common corridors are defined as "contiguous right of way or two parallel rights of way with structure centerlines separation less than the longest span length of the two transmission circuits at the point of separation or 500 feet, whichever is greater, between the transmission circuits. This separation requirement does not apply to the last five spans of the transmission circuits entering into a substation." Since the typical span for a 500-kV transmission line is approximately 1,500 feet, the Applicant incorporated as part of its transmission-line siting criteria a separation of approximately 1,500 feet between its proposed transmission line and existing lines. In 2012, the Western Electricity Coordinating Council retired the definition of common corridor and introduced Adjacent Transmission Circuits defined as "two transmission circuits with separation between their centerlines less than 250 feet at the point of separation" (Western Electricity Coordinating Council 2013).

From the perspective of the land-managing agencies, it is generally accepted that consolidating facilities minimizes environmental and land-use impacts (e.g., share access roads to minimize surface disturbance, avoid additional habitat fragmentation, reduce visual effects). In accordance with the FLPMA each right-of-way grant must contain terms and conditions that will, among other things, "minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment." Congress addressed the issue of rights-of-way in utility corridors in Section 503 of the FLPMA. Section 503 states that the Secretary of the Interior will designate corridors to minimize adverse environmental impacts and Executive Order 13213 requires the BLM to emphasize rights-of-way planning and corridor designations. The overall objective is to continue to make federal administered lands available for needed rights-of-way where consistent with national, state, and local plans, and use common rights-of-way to minimize environmental impacts and proliferation of separate rights-of-way.

Given the FLPMA preference to consolidate linear facilities to minimize proliferation of separate rights-of-way, the BLM determined it appropriate to request that the separation distance be reduced. Late in

2014, the BLM requested the Applicant colocate the proposed transmission line, along the Draft EIS Agency Preferred Alternative route, closer to existing transmission lines where possible.

In early 2015, the Applicant reviewed the routing and identified variations to colocate the proposed line closer to existing transmission lines and reviewed the collocated sections of alternative route with the BLM.

However, in a letter from the Applicant dated August 21, 2015, the Applicant stated that (1) the Applicant opposes BLM's route variation providing for an approximately 250-foot and not a 1,500-foot separation distance between adjacent lines, (2) the 250-foot separation distance would not be consistent with the Applicant's objectives for the B2H Project, (3) the separation distance was addressed as part of the right-of-way pre-application meetings and it would be arbitrary and capricious to require a new standard later in the B2H Project, and (4) BLM does not have the authority to dictate separation distances on private or state lands. In the letter, the Applicant explains that Western Electricity Coordinating Council System Performance Criterion TPL-001-WECC-CRT-2.1 identifies certain circumstances whereby electrical utilities must conduct system-reliability simulations and assessments.

These assessment requirements are triggered if, among other things, there are adjacent transmission circuits that share a common right-of-way for a total of more than 3 miles, that are separated by less than 250 feet between centerlines, and that both operate at greater than or equal to 300 kilovolts. Further, the Applicant explains that there is no NERC or Western Electricity Coordinating Council standard or optimal separation distance. Utilities are expected to use their experience and judgment in siting their transmission system in proximity to existing systems. At a minimum, new transmission systems must avoid common node failures, which include the loss of two parallel transmission lines in proximity to each other. Common node failures can result from, among other things, a shield wire from one line being dragged into the adjacent line, high winds, dust storms, ice storms, blizzards, landslides, earthquakes, vandalism, and equipment failure. The NERC and Western Electricity Coordinating Council standards leave the responsibility to the transmission line owner to avoid common node failures and to ensure reliable delivery of electrical services.

The BLM considered the Applicant's statements in its August 21, 2015 letter, the requirements of FLPMA, and comments on the Draft EIS encouraging colocation closer to existing lines, and decided to carry forward and analyze in detail in the Final EIS both the Applicant's originally proposed alignment approximately 1,500 feet from existing transmission lines and the alignment collocated closer to (no less than 250 feet away from) existing transmission lines.

2.1.1.3 Recommended Route-Variation Options

A number of comments on the Draft EIS offered recommendations for local route-variation options as variations of portions of alternative routes within the B2H Project area. All of the recommended route-variation options and whether the route-variation option has been carried forward in the Final EIS or was considered but eliminated from detailed analysis in the Final EIS are described below. The recommended route-variation options carried forward in the Final EIS are shown on Map 2-5. Section 2.5.4 describes the recommendations for route-variation options that were considered but eliminated from detailed analysis in the Final EIS. Maps 2-8a and 2-8b show the recommended route variations that were considered but eliminated from detailed analysis in the Final EIS.

Segment 1—Morrow-Umatilla

Slatt Substation Route-Variation Option

The Columbia-Snake River Irrigators Association, Oregon Department of Agriculture, Morrow County, City of Boardman, and businesses (Windy River, Hale Companies, Boardman Tree Farm, Pasco Farming, Inc.) recommended a route-variation option that would extend the Horn Butte Substation Alternative route, south of the Naval Weapons Systems Training Facility, approximately an additional 10 miles to the west to connect with the existing BPA Slatt 500-kV Substation (refer to Map 2-8a). The intent of the recommended alternative route was to mitigate impacts on irrigated agricultural lands associated with alternative routes to the Longhorn Substation and it was suggested as an alternative for connecting into the Mid-Columbia grid.

In a letter dated July 23, 2015, BPA, the sole owner of the Slatt Substation, informed the BLM that the Slatt Substation has no open 500-kV bays and there are “severe physical constraints” with expanding the substation to accommodate the B2H Project. Also, BPA has not determined that a joint ownership structure, including an open-bus concept, would be acceptable or even feasible for existing BPA substations, including the Slatt Substation Because the substation is wholly owned by BPA, BPA’s existing policy and rate schedules would require that BPA charge Idaho Power Company and PacifiCorp for use of the substation (which would be passed onto the rate payers).

The BLM reviewed the recommended route-variation option and, based on BPA’s explanation that it is technically and economically not feasible and it would not meet the interests and objectives of the Applicant and its partners, the BLM did not carry it forward for detailed analysis in the Final EIS (Section 2.5.4.3).

West of Bombing Range Road Route-Variation Option

Idaho Power, Oregon Department of Land Conservation and Development, Oregon Department of Agriculture, Columbia-Snake River Irrigators Association, businesses (Windy River; Hale Companies; Boardman Tree Farm; Pasco Farming. Inc.); Westland Enterprises LLC; Terra Poma Land LLC; Homestead Farms, Inc.; Pacific Northwest Generating Cooperative, UEC) and individuals recommended a routing of the transmission line on the west side of Bombing Range Road on the

NWSTF Boardman. This routing-variation is part of the Applicant's change to its Proposed Action and is analyzed in the Final EIS (Section 2.5.2.1).

Parallel Interstate 84/Existing 23-kV Transmission Line Route-Variation Options

Umatilla County, WildLands Defense; a consortium letter from OCTA, Hells Canyon Preservation Council, Oregon Wild, and WildEarth Guardians, Glass Hill Coalition, Elk Song Ranch; and several individuals recommended a route-variation option that would parallel Interstate 84 in Umatilla County and/or parallel existing 230-kV transmission lines. The intent is to reduce impacts on privately owned lands and consolidate utilities to avoid proliferation of utility corridors in this area. The BLM asked Idaho Power to develop a route variation colocated with Interstate 84 and/or the existing 230-kV transmission lines. At the BLM's request for an alternative route variation paralleling Interstate 84 and/or the existing 230-kV transmission lines, the Applicant developed four options that would be responsive to Draft EIS comments to colocate with the Interstate 84 or the existing 230-kV transmission lines. The options are described below.

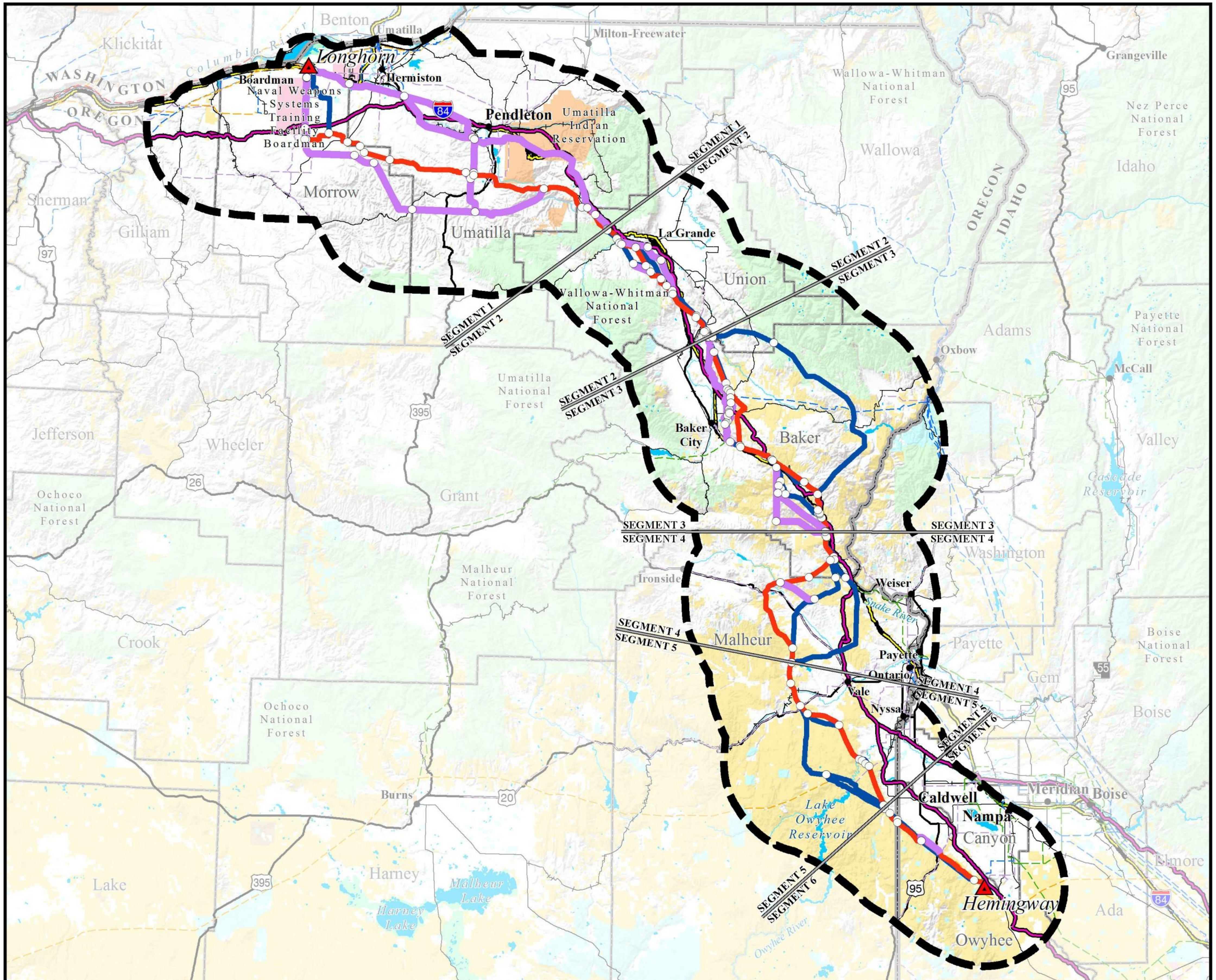
Route-Variation Option 1: From the Longhorn Substation, Option 1, parallels Interstate 84 to west of Pendleton, where it turns south and east to go around the community of Pendleton, parallels an existing transmission line to Interstate 84 and continues to parallel the transmission line to the southeast through the mountainous area of the Umatilla Indian Reservation and then roughly parallel to Interstate 84 to the Hilgard area.

Route-Variation Option 2: From the Longhorn Substation, Option 2 is similar to Option 1, but, in the area of Stanfield, Option 2 heads southeast to parallel an existing transmission line to the area of Rieth and then is the same as Option 1, including crossing the Umatilla Indian Reservation, to the Hilgard area.

Route-Variation Option 3: From the Longhorn Substation, Option 3 is the same as Option 1 to the area southeast of Rieth, where it continues to the south, then heads east, skirting the Umatilla Indian Reservation over to the area of Kamela where the route variation then parallels Interstate 84.

Route-Variation Option 4: From the Longhorn Substation, Option 4 is the same as Option 2 to the area south of Rieth, where it continues south and is the same as Option 3.

Options 1 and 2 cross the Umatilla Indian Reservation, and were considered but eliminated from detailed analysis, as explained in Section 2.5.4.3. Option 3 and 4 are addressed as variations along the Interstate 84 Alternative route (Section 2.5.2.1).



Map 2-5
Recommended Route-Variation Options Carried Forward in the Final EIS

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

- Project Area Boundary
- Substation (Project Terminal)
- Applicant's Proposed Action Alternative
- Alternative Route
- Recommended Route-Variation Option
- Link Node
- Segment Line

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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:
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- 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).
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Alternative routes last revised: February 18, 2016
Final EIS: November 2016

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Miles
1:1,393,920 or 1 inch = 22 miles

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Umatilla South Route-Variation Option

In a memorandum, dated September 11, 2015, Umatilla County requested that the BLM analyze a route-variation option that routes the transmission line approximately 10 miles south of the east-west portion of the Applicant's Proposed Action Alternative route in Segment 1. In January 2016, Umatilla and Morrow counties submitted a second request to the BLM to extend the route-variation option farther to the west and connect with the route-variation option west of Bombing Range Road. The intent of this route-variation option was to avoid existing agricultural lands. The Umatilla South route-variation option is incorporated as a segment of alternative routes in Segment 1 (Section 2.5.2.1).

Segment 2—Blue Mountains

Mill Creek Route-Variation Option

The Glass Hill Coalition, Elk Song Ranch, and individuals in Union County requested a route-variation option that would head east from the Applicant's Proposed Action Alternative (at the eastern boundary of the Wallowa-Whitman National Forest) to parallel an existing transmission line north of Morgan Lake, then south east paralleling the existing 230-kV transmission line to the point where it rejoins the Applicant's Proposed Action Alternative route north of Tamarack Mountain. The intent of this route-variation option is to reduce impacts on privately owned land and consolidate utilities to avoid proliferation of utility corridors in this area. In January 2016, Union County coordinated with the BLM and Idaho Power to adjust the route-variation options to avoid residences in proximity to the community of La Grande. In spring 2016, the BLM requested input from the cooperating agencies on the preliminary Agency Preferred Alternative. As A result, Union County confirmed this route-variation option as its preferred alternative. The Mill Creek route-variation option is addressed as part of the Mill Creek Alternative route (Section 2.5.2.2).

Glass Hill Route-Variation Option

Comments on the Draft EIS recommended a variation of the Glass Hill Alternative. The Glass Hill Alternative spans the canyons of Graves Creek, Little Rock Creek, Rock Creek, and then onto the high elevation of Cowboy Ridge. The recommended route-variation option would move the route approximately 2.5 miles west of Cowboy Ridge, which would avoid the spring, summer, and fall habitat of a large concentration of elk; avoid the high elevation of Cowboy Ridge, an ecological area unique to the Blue Mountain Province; further reduce potential views of a transmission line from the Morgan Lake recreation area; and move the route into an area with better road access thereby reducing the miles of new roads needed for the B2H Project. The Glass Hill route-variation option is addressed as a variation of the Glass Hill Alternative route (Section 2.5.2.2).

Segment 3—Baker Valley

Parallel Interstate 84 (Baker County) Route-Variation Option

The Oregon Department of Fish and Wildlife recommended a route-variation option intended to avoid Greater Sage-Grouse Priority Habitat Management Area (PHMA) by closely paralleling Interstate 84 from Oregon Highway 203 to the end of Segment 3. The intent of this route variation was to mitigate impacts on Greater Sage-Grouse PHMA. Because of other constraints along this route-variation option (e.g., proximity to Baker Municipal Airport, crosses through airspace associated with the airport), it was considered but eliminated from detailed analysis (Section 2.5.4.3).

Sunnyslope Route-Variation Option

Commenters recommended a route-variation option that is roughly parallel to and east of the Draft EIS Flagstaff Alternative (now Flagstaff A Alternative) east of Baker Municipal Airport, for approximately 8 miles. The intent of this route variation is to locate the alignment closer to section lines to reduce impacts on land owners and agricultural operations. Later in January 2016, the BLM coordinated with Baker County to adjust route-variation options in that area to avoid crossing Greater Sage-Grouse PHMA, a high point in proximity to the National Historic Oregon Trail Interpretive Center (NHOTIC) from which a 500-kV transmission line would be visible, crossing in the proximity of an intact segment of Oregon National Historic Trail, and minimize crossing agricultural lands. The Sunnyslope route-variation option is addressed as a segment of an alternative route in Segment 3 (Section 2.5.2.3).

Durkee Route-Variation Option

In comments on the Draft EIS, Baker County recommended a route-variation option, with a map provided, that would begin farther south than the Burnt River Mountain Alternative (near Dixie, Oregon) and extend farther west and then north to join the Burnt River Mountain Alternative approximately 6 miles northwest of Durkee. The intent of this route-variation option was to mitigate impacts on agricultural land uses and privately owned lands, socioeconomics, and high-value soils in and around the community of Durkee. Generally, the requested Durkee route-variation option follows section lines and crosses both private lands and BLM-administered land. Later in January 2016, Baker County coordinated with the BLM to adjust the route-variation option and recommend another local route-variation option, Burnt River West route-variation option that would further reduce impacts on agricultural lands and sensitive resources. The route-variation options described here are addressed as a part of alternative routes in Segment 3 (Section 2.5.2.3).

Burnt River Canyon Route-Variation Option

Commenters recommended a localized route-variation option at the crossing of Burnt River Canyon in proximity to the mouth of the canyon. These are short route variations; it would be about 0.6 mile (at the widest point) farther west of the current Burnt River Alternative. The intent of this adjustment is to move the alternative route variations farther west from the mouth of Burnt River Canyon to reduce visual impacts and avoid crossing the irrigated agriculture area. The Burnt River Canyon route-variation option is addressed as a segment of alternative route in Segment 3 (Section 2.5.2.3).

Segment 4—Brogan

Brogan Route-Variation Option

A nongovernmental organization, Stop Idaho Power, recommended a route-variation option to the south of the Applicant’s Proposed Action Alternative in southern Baker County and northern Malheur County, for approximately 8 miles before sharing an alignment with the Willow Creek Alternative, and circumvents Little Valley, Striped Mountain, Brosman Mountain, McDowell Butte. The intent of this route variation is to avoid two 2-mile buffers around sage-grouse leks near Brogan. However, while it avoids the two buffer areas, it is entirely in Greater Sage-Grouse PHMA. The route-variation option does not offer substantive improvement over the alternative route to the east, which minimizes the impacts on priority sage-grouse habitat in this area and uses portions of the West-wide Energy Corridor. This route-variation option was considered but eliminated from detailed analysis (Section 2.5.4.3).

SEGMENT 5—MALHEUR

OWYHEE RIVER CROSSING ROUTE-VARIATION OPTIONS

Comments on the Draft EIS recommended a variation of the Applicant's Proposed Action Alternative route that would move the alignment crossing the Owyhee River to the east to reduce effects on visual resources and to be located in the BLM-designated utility corridor. However, the recommended route-variation option would still cross the river in a segment of the river determined by the BLM as suitable for designation as a Wild and Scenic River (WSR). The recommended route-variation option would include structures that would be skylined on a bluff along the south side of the river. Both the Applicant's Proposed Action Alternative route and the recommended route-variation option are within the portion of the river that the BLM has determined suitable for designation as a National WSR with an outstanding remarkable value classification of recreational. The river's wild and scenic characteristics would be degraded through the visual influence of these structures as recreation users enter the canyon further to the southwest.

In response to this issue, the BLM developed a route-variation option that is farther to the east and outside of the area designated as suitable, but located in the BLM-designated utility corridor. Since the BLM developed a viable route-variation option to address the issue, the recommended route-variation option was eliminated from detailed analysis in the Final EIS (Section 2.5.4). The route-variation option developed by the BLM is a slight variation of the Applicant's Proposed Action Alternative route at the crossing of the Owyhee River addressed in Section 2.5.2.5.

SEGMENT 6—TREASURE VALLEY

JUMP CREEK ROUTE-VARIATION OPTION

A letter from a consortium of the Oregon Natural Desert Association, Idaho Conservation League, Oregon Wild, Hells Canyon Preservation Council, and the Wilderness Society recommended a route-variation option located farther north from the Jump Creek recreation area. Due to the visual sensitivity of this recreation area, the intent of the route-variation option is to increase the distance between Jump Creek and the B2H Project while being located adjacent to existing transmission lines. This route-variation option was considered but eliminated from detailed analysis, as explained in Section 2.5.4.3.

2.2 PROPOSED ACTION

As introduced in Section 1.1, the proposed B2H Project includes the following:

- Constructing, operating, and maintaining a single-circuit, 500-kV, alternating current (AC), overhead transmission line in a 250-foot-wide right-of-way (except where crossing the NWSTF

Boardman) from the planned 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 access roads and permanent service roads; and temporary multi-use yards, helicopter fly yards, and pulling-and-tensioning sites); and geotechnical investigations would be completed in advance of final design and engineering;

- Constructing a 500-kV connection in the planned Longhorn Substation;
- Constructing a communication system to control the transmission line and manage the flow of electricity, with regeneration sites approximately every 40 miles;
- Removing the exiting 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.

Also, although not part of the Applicant's Proposed Action, it is anticipated that the existing BPA 69-kV line, displaced by the proposed 500-kV transmission line, may be relocated to the east of Bombing Range Road. This additional action of replacing the BPA 69-kV transmission line is a connected action under the NEPA, the effects of which the BLM must analyze and address in the EIS. This action is described in Section 2.3.1 and the potential effects of this action are reported throughout Chapter 3.

2.3 Project Description – Common to All Action Alternatives

2.3.1 System Components

The transmission line system is made up of the right-of-way, transmission and foundation structures, conductors, grounding system, communication station sites, and associated hardware. This section provides descriptions of the various components of the transmission line system proposed for the B2H Project. Table 2-1 is a summary of the typical design characteristics of the 500-kV transmission line and the land that would be temporarily and/or permanently disturbed. Similar information is provided for the double-circuit 138/69-kV line and section of 230-kV line that may be relocated.

Table 2-1. Typical Design Characteristics	
Feature	**Description**
500-Kilovolt Transmission Line	
Line length	Proposed Action 271.7 miles of single circuit 500-kV
Types of structures, height, average span	Single-circuit lattice structure: • 75- to 195 feet tall • 1,200- to 1,800-foot spans (approximately 4 to 3 structures per mile) Single-circuit two-pole H-frame structure: • 85- to 100-feet tall • 450- to 600-foot spans (approximately 12 to 9 structures per mile) Alternative single-circuit two-pole H-frame structure • 85- to 165-feet tall • 600- to 1,300-foot spans (approximately 9 to 4 structures per mile) Alternative single-circuit three-pole H-frame structure – 85 to 165 feet • 85- to 165-feet tall • 600- to 1,300-foot spans (approximately 9 to 4 structures per mile)
Typical Right-of-way width	250 feet
Land Temporarily Disturbed	
Structure construction footprint	• Single-circuit lattice structure – 250 by 250 feet (1.4 acres) • Single-circuit two-pole H-frame structure – 250 by 90 feet (0.5 acre) • Alternative single-circuit two-pole H-frame structure – 250 by 90 feet (0.5 acre) • Alternative single-circuit three-pole H-frame structure – 250 by 90 feet (0.5 acre)
Pulling and Tensioning sites (includes some light duty fly yards)	10 acres (5 acres per each end of conductor) every 1.5 to 2 miles
Multi-use Areas (includes fly yards)	Approximately 30 acre sites located approximately every 15 miles
Access roads	Typically 14-foot-wide operational width with 16 to 35 feet wide construction disturbance (based on soils and terrain)
Land Permanently Required	
Structure operations footprint	• Single-circuit lattice structure – 50 by 50 feet (0.06 acre) • Single-circuit two-pole H-frame structure – 50 by 15 feet (0.02 acre) • Alternative single-circuit two-pole H-frame structure – 50 by 15 feet (0.02 acre) • Alternative single-circuit three-pole H-frame structure – 90 by 15 feet (0.03 acre)
Communication sites	100- by 100-foot area with 75- by 75-foot fenced area and a 12- by 32- by 9-foot building; located inside the right-of-way approximately every 40 miles
Access roads	New access roads typically would be revegetated (not recontoured) leaving the road for maintenance/operations
Electrical Properties	
Nominal voltage	500-kilovolt (kV) alternating current line-to-line
Circuit configuration	Single circuit, three phase triple-bundle configuration
Minimum ground clearance of conductor	29.5 feet minimal, increased to 35.5 feet in agricultural use areas
230-Kilovolt Double-Circuit Transmission Line	
Line length	12.2 to 15.6 miles
Types of structures, height, average span and number of structures	Double-circuit monopole • Not to exceed 100 feet • 400- to 600-foot spans Approximately 161 to 206 structures
Right-of-way width	55 feet

Table 2-1. Typical Design Characteristics	
Feature	**Description**
Land Temporarily Disturbed	
Structure construction footprint	100 by 150 feet per structure (0.3 acre)
Wire-pulling/splicing sites	1.2 acres along right-of-way every 1 to 2 miles
Land Permanently Required	
Structure operations footprint	25 by 15 feet per structure (0.1 acre)
Electrical Properties	
Nominal voltage	230-kV alternating current
Circuit configuration	Double circuit
Minimum ground clearance of conductor	27 feet minimum
230-Kilovolt Transmission Line	
Line lengths	0.9 mile of 230-kV single-circuit to rebuild
Types of structures, height, average span and number of structures	Single-circuit two-pole H-frame structure (approximately three) • 50-feet to 90-feet tall • 400- to 1,200-foot spans • Approximately three structures Single-circuit three-pole H-frame structures (approximately three) • 50 feet to 90 feet • 110 to 1,400 • Approximately three structures
Right-of-way width	125 feet
Land Temporarily Disturbed	
Structure construction footprint	Single-circuit two-pole H-frame structure 100 by 150 feet per structure (0.3 acre) Single-circuit three-pole H-frame structure 125 by 150 feet per structure (0.4 acre)
Land Permanently Required	
Structure operations footprint	Single-circuit two-pole H-frame structure 25 feet by 15 feet (0.01 acre) Single-circuit three-pole H-frame structure 50 feet by 15 feet (0.02 acre)
Electrical Properties	
Nominal voltage	230-kV alternating current
Circuit configuration	Single-circuit, three-phase, triple-bundle configuration
Minimum ground clearance of conductor	27 feet minimal
138/69-kilovolt Transmission Lines	
Line length	5.4 miles of rebuilt 69-kV to 138/69-kV double circuit
Types of structures, height, average span and number of structures	Double-circuit monopole with distribution underbuild • 55- to 100-feet tall • 110- to 1,400-foot spans • Approximately 67 structures
Right-of-way width	100 feet
Land Temporarily Disturbed	
Structure construction footprint	100 by 100 feet per structure (0.2 acre)
Wire-pulling/splicing sites	1.2 acres along right-of-way every 1 to 2 miles.
Land Permanently Required	
Structure operations footprint	10 by 10 feet per structure

Table 2-1. Typical Design Characteristics	
Feature	**Description**
Electrical Properties	
Nominal voltage	138/69-kV alternating current
Circuit configuration	Double-circuit with distribution underbuild
Minimum ground clearance of conductor	22 feet above grade for 12.5-kV underbuild on 138/69-kV double-circuit
Table Source: Idaho Power Company 2016	

2.3.1.1 Right-of-Way

A transmission line easement or right-of-way is a strip of land (corridor) acquired from property owners. The agreement with the property owner grants the Applicant the right to build, operate, and maintain the transmission line as well as manage the vegetation in the authorized area. The Applicant would acquire rights for the route selected for construction of the proposed transmission line and access roads through right-of-way grants and easements with federal, state, and local governments; other companies (e.g., utilities, railroad); and private landowners.

The Applicant would acquire rights-of-way for transmission lines through mutual agreement with property owners for the use of their property of Eminent Domain that would be used as a last resort. The following tools may be used to acquire rights-of-way:

- **Easements** give the utility company the right to use the land owned by the individual for a specific purpose. Most commonly, negotiations directly with private property owners determine easement rights and restrictions for using portions of the land that remain owned by the individual.
- **Permitting** occurs when the utility applies for a permit to place the facility across public lands.
- **Eminent domain** is an option of last resort when all other options have been unsuccessful. In this case, the utility company may exercise its right to use the easement or property through court actions. Independent appraisers, through the court, would determine a fair price to be paid for the land use.

Property owners are compensated for easements regardless of how they are acquired. The value of the easement is determined using several different sources, including the assessor's records, an appraiser’s corridor study and local comparable sales.

Rights to land for substation and communication sites would be obtained through easements or in fee simple title where located on private land.

Landowners have the right to restrict access by the general public to the easements. However, the easement allows the Applicant’s employees to access the line as needed to operate and maintain the transmission line. The Applicant, cooperating with the landowner, would establish easement restrictions to ensure that a safe distance from the transmission line is always observed.

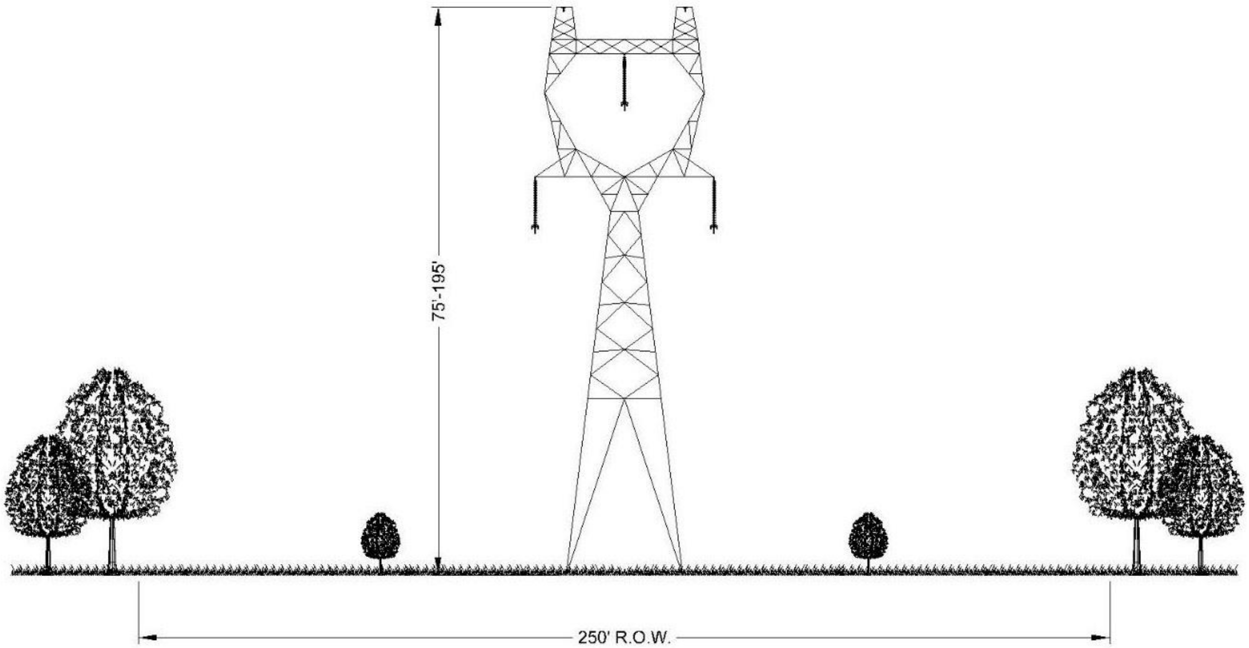
The Applicant would work with landowners to locate the facilities on the property, with consideration of engineering and environmental constraints, to ensure the continued use of their land. A 250-foot-wide easement is planned for the 500-kV steel lattice structure and the alternative steel pole H-frame structure.

A 90-foot-wide easement is anticipated for the proposed 500-kV transmission line where constructed along the west side of the eastern boundary of the NWSTF Boardman. The right-of-way for the 230-kV line relocation would be 125-feet wide and the right-of-way for the 138/69-kV double-circuit lines with the 12-kV distribution underbuild would be 100-feet wide. Rights-of-way designs are shown in Figures 2-1 through 2-4. Also, the right-of-way for the additional action of relocating the BPA's 69-kV line from the NWSTF Boardman is anticipated to be 55-feet wide.

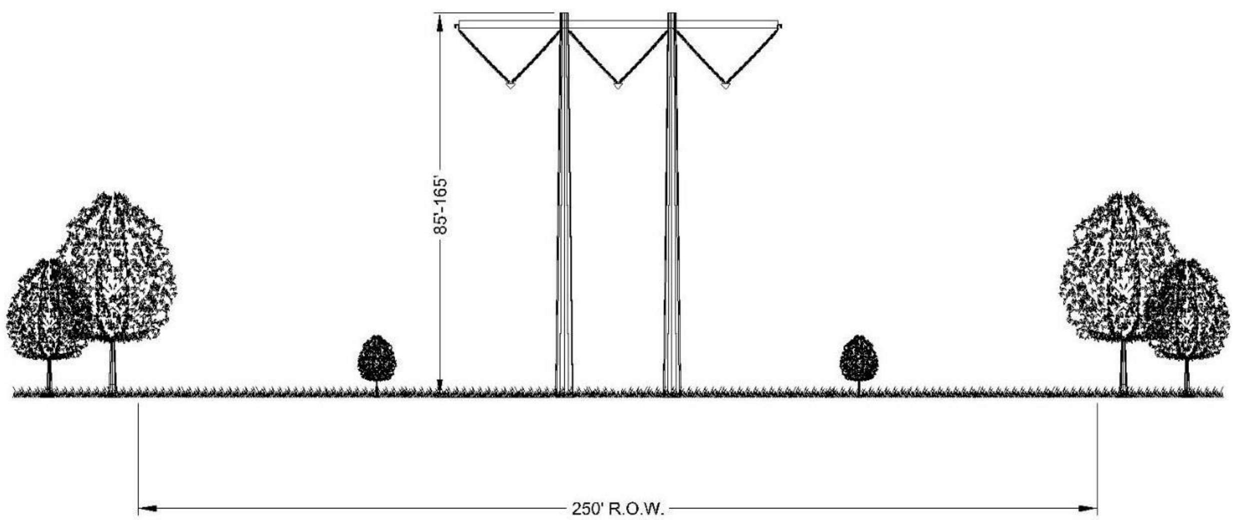
Right-of-way width requirements for the proposed transmission line are based on three criteria:

- Sufficient National Electrical Safety Code (NESC) clearance must be maintained to the edge of the right-of-way during a wind event when the conductors are blown towards the right-of-way edge.
- Sufficient room must be provided within the right-of-way to perform transmission line maintenance.
- Sufficient clearances must be maintained from the transmission line to the edge of the right-of-way where structures or trees may be located and deemed a hazard or danger to the transmission line. A narrower right-of-way could be accommodated in some areas, but in others, the full 250 feet (125 feet on each side of the centerline) would be required. A narrower right-of-way in forested areas can result in reliability problems. Falling trees are a major cause of outages and damage to transmission lines. In addition, many forest managers are resistant to allowing utilities to remove hazardous trees, which make reducing the right-of way in forested areas infeasible.

Specific localized conditions may result in slightly different right-of-way widths. These will be finalized during the detailed design. There is one potential exception known at this time; that is, if a route is selected along the west side of Bombing Range Road, the Applicant proposes that the easement for the proposed 500-kV transmission line would be 90 feet wide to repurpose the area currently used for the existing BPA 69-kV transmission line.



Proposed 500-kV Lattice Steel Right-of-Way Design



Proposed 500-kV Steel-Pole H-Frame Right-of-Way Design

Figure 2-1. 500-kV Right-of-Way Designs

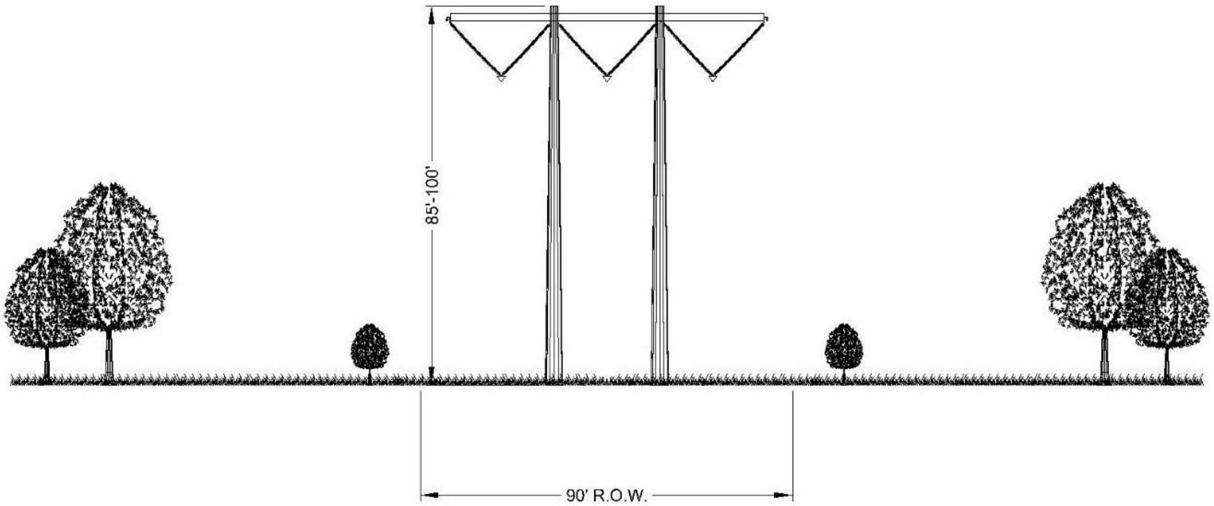


Figure 2-2. Alternate 500-kV Steel Pole Right-of-Way Design
(on and adjacent to the NWSTF Boardman only)

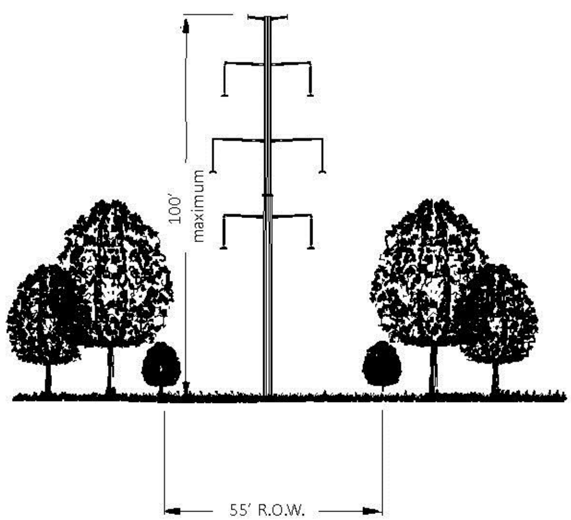


Figure 2-3. 230-kV Steel Monopole Double-Circuit Right-of-Way Design

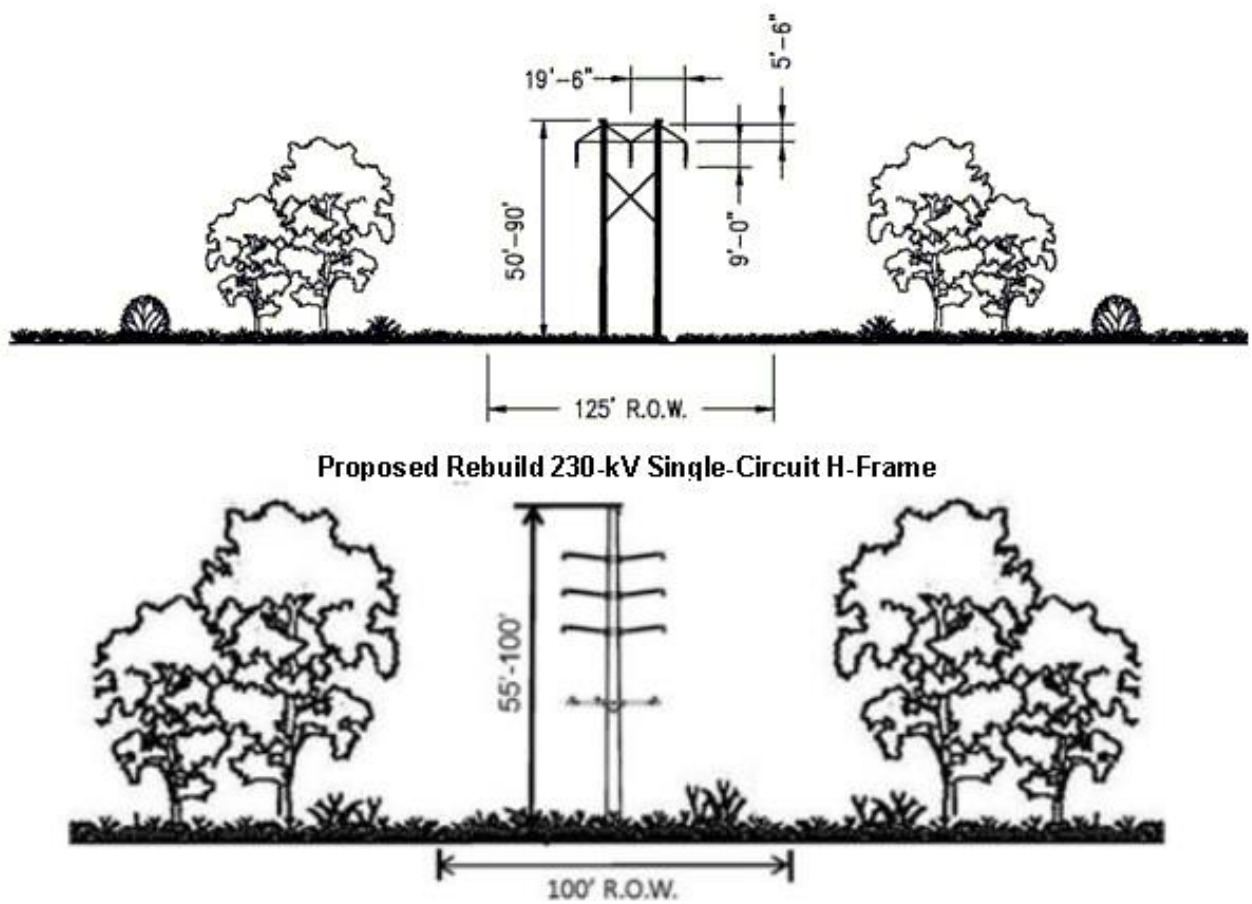


Figure 2-4. 230-kV and 138-kV/69-kV Right-of-Way Designs

Right-of-way would comply with NERC reliability standards and Western Electricity Coordinating Council reliability criteria. The Western Electricity Coordinating Council reliability criteria recognize the unique nature of the Western Electricity Coordinating Council system, where there are several instances of multiple long-distance transmission lines running parallel within a corridor and transferring power from remote generation location to distant load centers. At the time, the November 2011 Revised POD and right-of-way application were submitted, the Western Electricity Coordinating Council criteria required a minimum separation by at least, “the longest span or 500 feet, whichever is greater, between the transmission circuits (TPL-[001-004]-WECC-1-CR, April 18, 2008)[2] For the purposes of making its right-of-way application, the Applicant assumed the separation between the transmission lines would be approximately 1,500 feet. Land between rights-of-way that are separated to meet reliability criteria would not be encumbered with an easement but could be limited practically in land uses due to the proximity of two or more large transmission lines. In 2012, the Western Electricity Coordinating Council retired the definition of common corridor and introduced Adjacent Transmission Circuits defined as “two transmission circuits with separation between their centerlines less than 250 feet at the point of

[2]The B2H Project transmission line would be consistent with the 2012 WECC guidance, NERC and WECC reliability standards (TPL-004-0(i)(a), and 70 Federal Regulation 20970, 20970-71 (April 22, 2015).

separation" (Western Electricity Coordinating Council 2013). The Applicant clarified that it proposes to separate by 125 feet from any radial 230-kV line associated with existing or new wind-generation projects (Idaho Power Company 2016)

After the transmission line has been energized, agricultural and nonagricultural land uses that are compatible with safety regulation would be permitted in the right-of-way, subject to limitations. Limitations on the use of equipment taller than 15 feet under the transmission line or around structures except for noted below; restrictions on crops that can grow to more than 15 feet at maturity (such as timber) within 25 feet of the outermost phase conductor; restrictions on storage of flammable materials of any kind on the right-of-way; restrictions on refueling equipment under the transmission line; restrictions on grading, land recontouring, and material stockpiling under the transmission line or near structure locations; and required coordination with the Applicant for the construction of fences, irrigation lines, or other facilities that could be subject to induced current and for the use of agricultural equipment taller than 20 feet.

2.3.1.2 Transmission Line Structures

A number of different types of structures may be used for the transmission line. The majority of the transmission line circuits would be supported by 500-kV single-circuit steel lattice structures; however, the Applicant would use other types of structures for special purposes. A description of the various types of structures follows.

- **Tangent Structures:** Tangent structures are the most common type of structure and would be used along straight sections of the alignment. These structures are designed to support a range of wind and ice loading conditions but will only support loads associated with very slight line angles (0 to 1 degree). A typical tangent 500-kV single-circuit lattice structure is illustrated in Figure 2-5.
- **Angle Structures:** Angle structures are used at angle points along the transmission line. Angle structures that are not designed as dead-end or terminal structures are called "running" angle structures. "Running" angle structures are designed to support a range of wind and ice loading conditions and will support the loads associated with moderate angles up to 25 degrees. Angle structures typically are designed for a specific range of angles—3 to 10 degrees, 10 to 25 degrees, etc.
- **Dead-end Structures:** Dead-end structures generally are used at station termination points, line angles greater than 25 degrees, on each end of long spans such as those crossing canyons and wide rivers, and other points along the transmission line where it is appropriate to support the tension in the conductor. Dead-end structures are designed to support the vertical loads, transverse loads, line-angle loads (where appropriate), and the longitudinal load of the conductor. Dead-end structures also may be used in situations where maintaining clearance is difficult with tangent structures.
- **Steel Monopoles:** Single poles, or monopoles, are tubular steel structures fabricated from high-strength plate steel formed into tubes. Tubular poles can be fabricated into various structure

configurations including single-pole (Figures 2-8 and 2-10), two-pole H-frame (Figures 2-6, 2-7, and 2-9), and three-pole. Tubular steel may be galvanized or made from weathering steel. Tubular steel structures may be imbedded directly or bolted to drilled piers, piles, or a cast-in-place foundation, allowing their use in various soils. Tubular steel, single-pole, double-circuit structures are proposed for the relocation of the BPA's 69-kV transmission line from its current placement on the west side of eastern boundary of the NWSTF Boardman to the east side of Bombing Range Road. Tubular steel, single-pole structures also are proposed for the 138/69-kV double circuit segment of line that may be relocated in Baker County. Two-pole H frame structures are proposed for the segment of 230-kV line that may be relocated in Baker County. Two-pole H-frame 500-kV structures would be used in the vicinity of the NWSTF Boardman (at a reduced height not to exceed 100 feet). Also, 500-kV two-pole H-frame structures may be used as an alternative to the 500-kV lattice, if needed.

- **Transmission Line Crossing Structures:** Transmission line crossing structures are fabricated from high-strength steel. These structures may be delta-configuration lattice steel structures or tubular steel H-frame structures. Preferably, these structures are located perpendicular to the line being crossed. These structures' arrangements would allow the 500-kV line to cross over the top of lower voltage transmission lines or under other 500-kV lines when necessary. Crossing structures would have the same design properties as other transmission-line structures.
- **Transpositional Structures:** At certain points along the transmission line, it may be necessary to install transpositional structures, which is a transmission-line structure used to "transpose" each of the three phases (or conductors) in the transmission circuit so that each phase changes its relative place in the transmission circuit. Transpositional structures used on the B2H Project would be modified dead-end structures with added arms and insulator strings that would allow the phases to move to different positions on the structure. The need to install a transpositional structure is dependent on the electrical characteristics and length of the line and the need to balance the electrical impedance of the transmission line between stations.

In addition, a typical 230-kV single-circuit H-frame structure is illustrated on Figure 2-9 and a typical 138/69-kV structure with a 12-kV distribution underbuild is illustrated in Figure 2-10.

Table 2-1 provides a summary of the typical characteristics of the proposed and alternative transmission line structure characteristics.

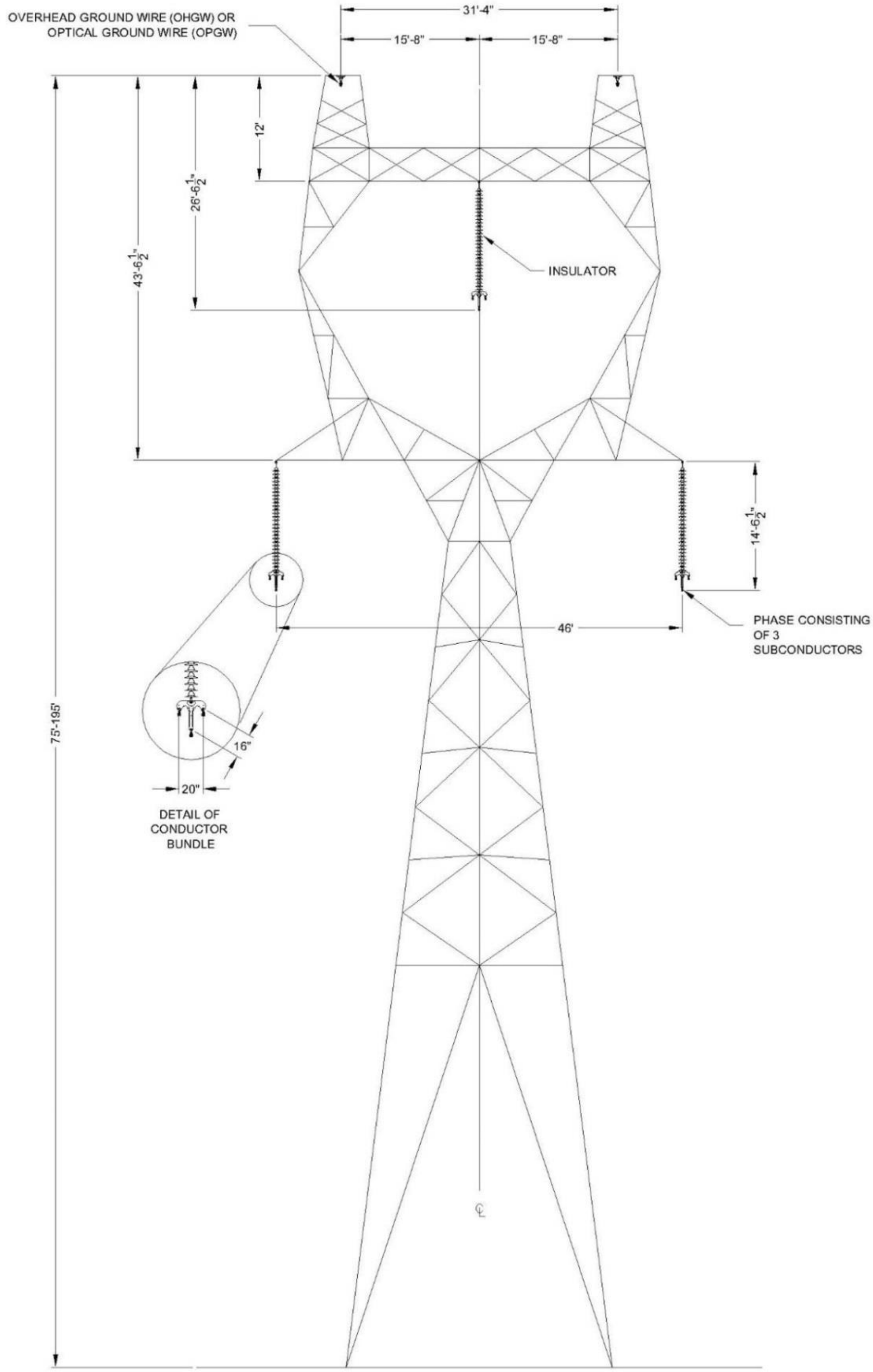


Figure 2-5. Proposed 500-kV Single-Circuit Lattice Steel Structure

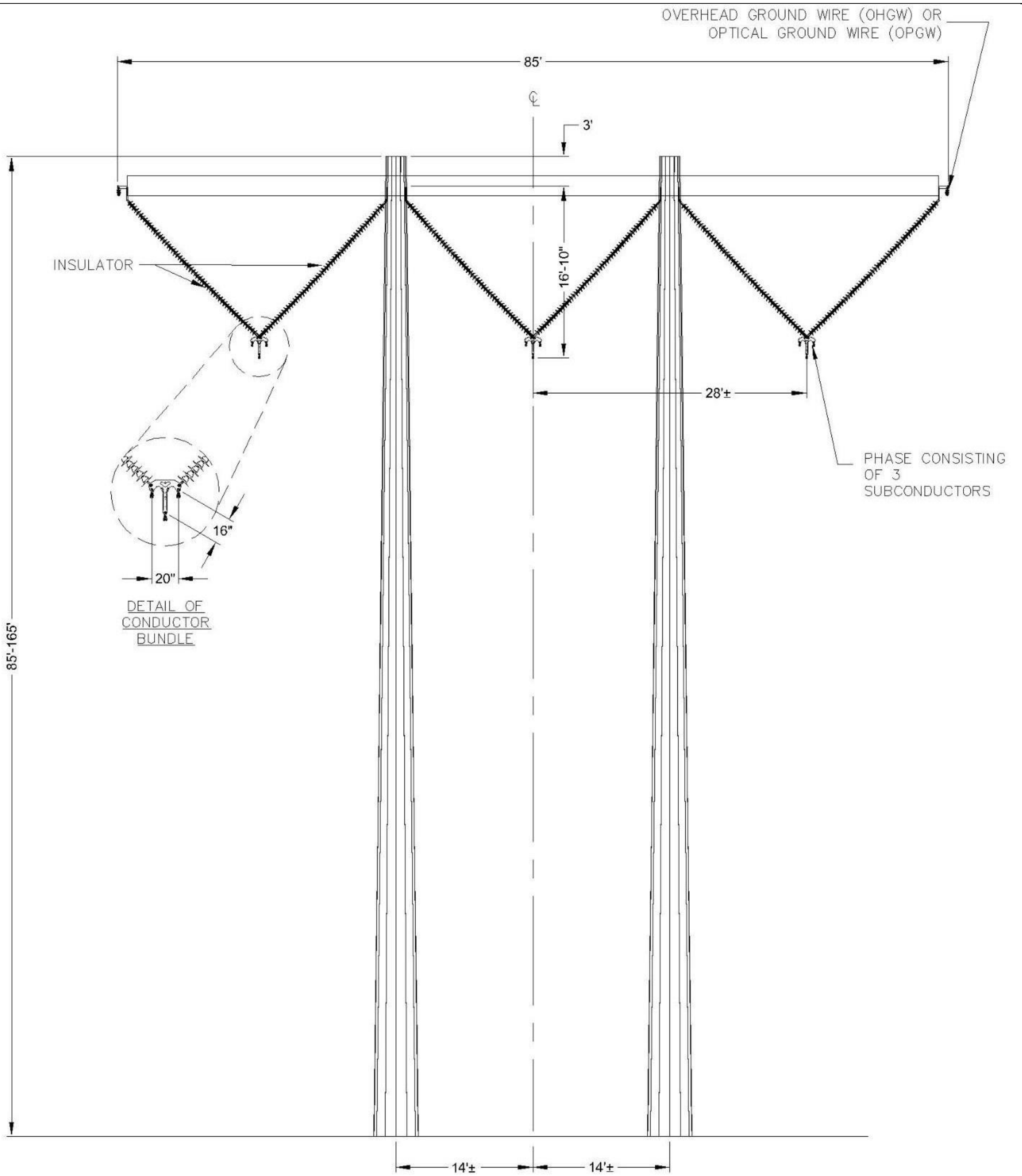


Figure 2-6. Proposed 500-kV Single-Circuit Tubular Steel Two-Pole H-Frame Structure

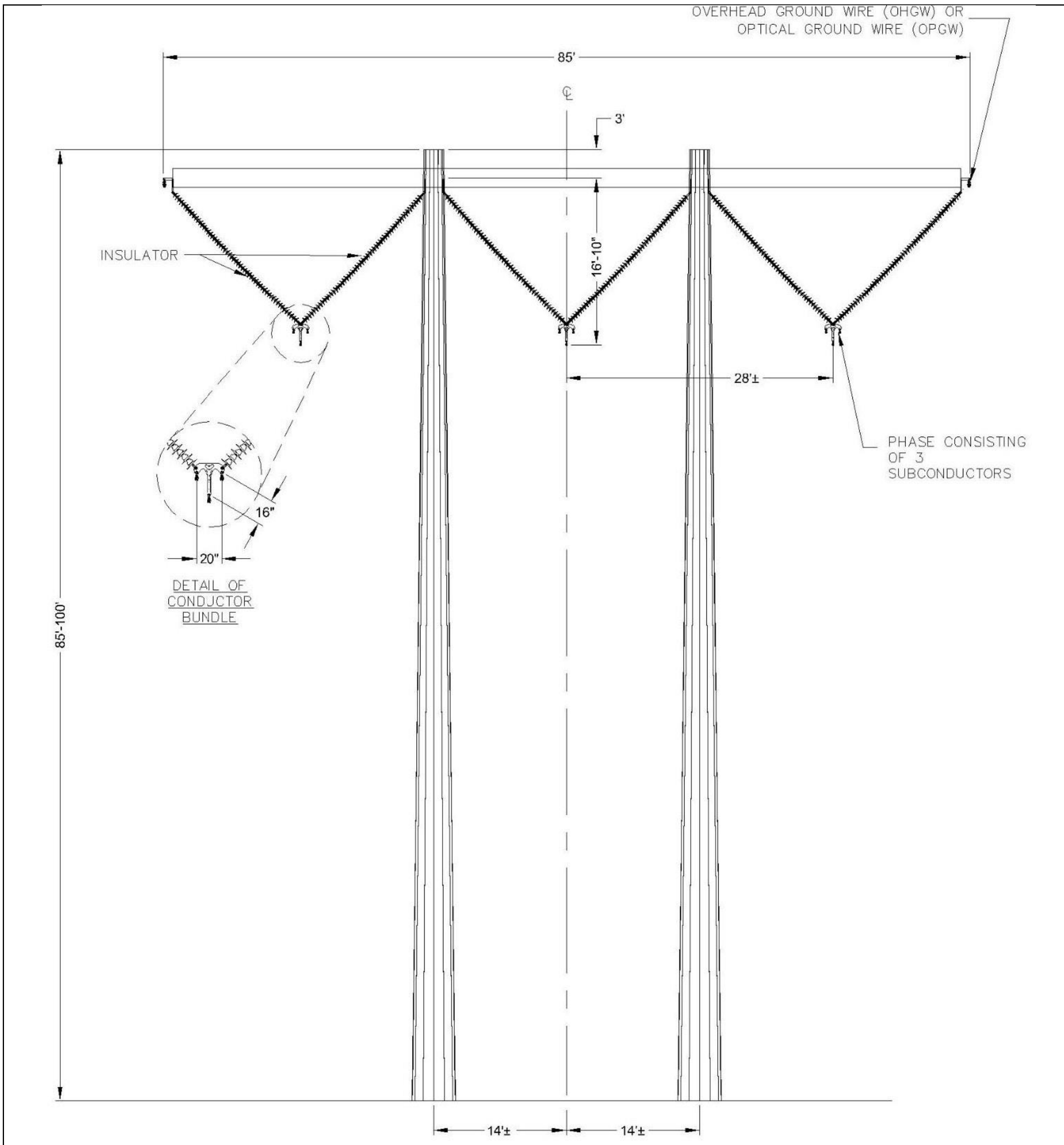


Figure 2-7. Alternative 500-kV Single-Circuit Tubular Steel Two-Pole H-Frame Structure
(on or adjacent to the NWSTF Boardman only)

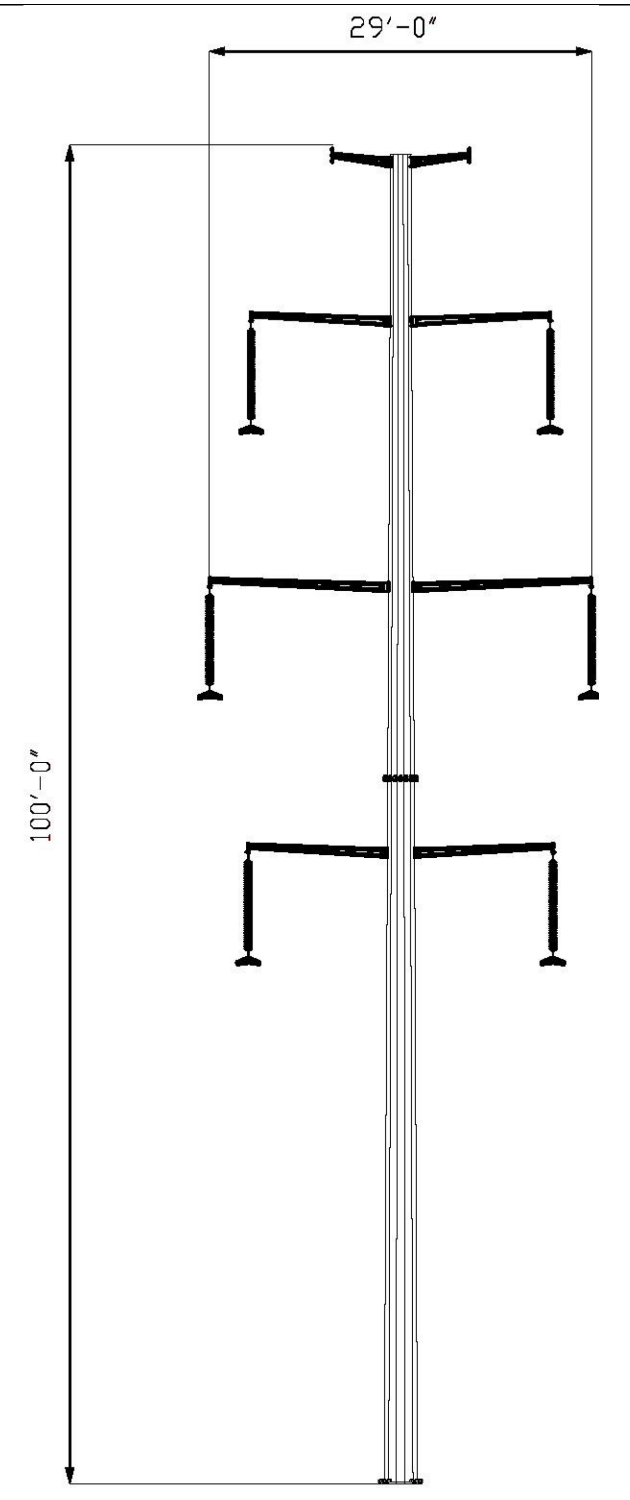


Figure 2-8. Proposed 230-kV Steel Monopole Double-Circuit Structure

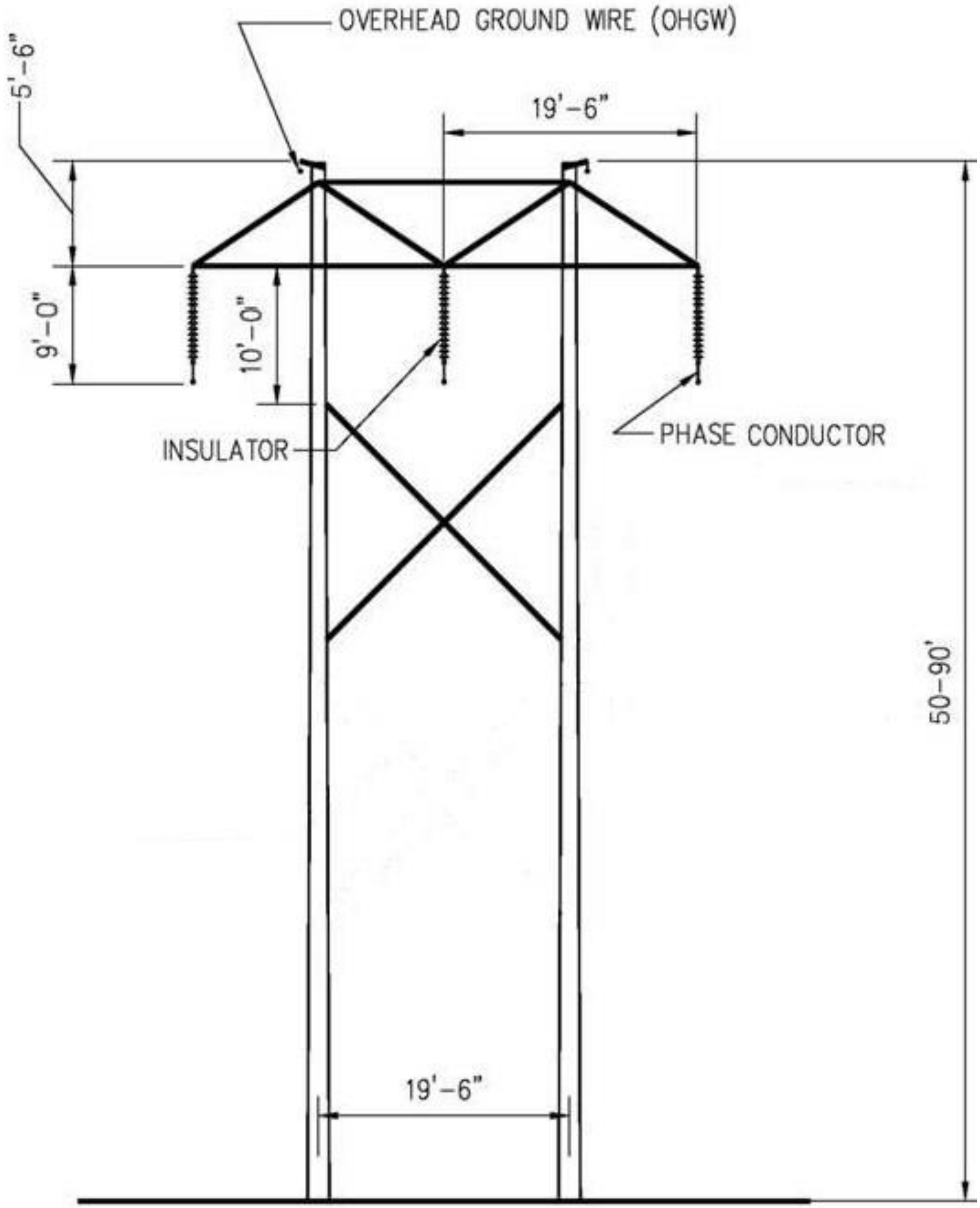


Figure 2-9. Proposed Rebuild Single-Circuit 230-kV H-Frame Structure

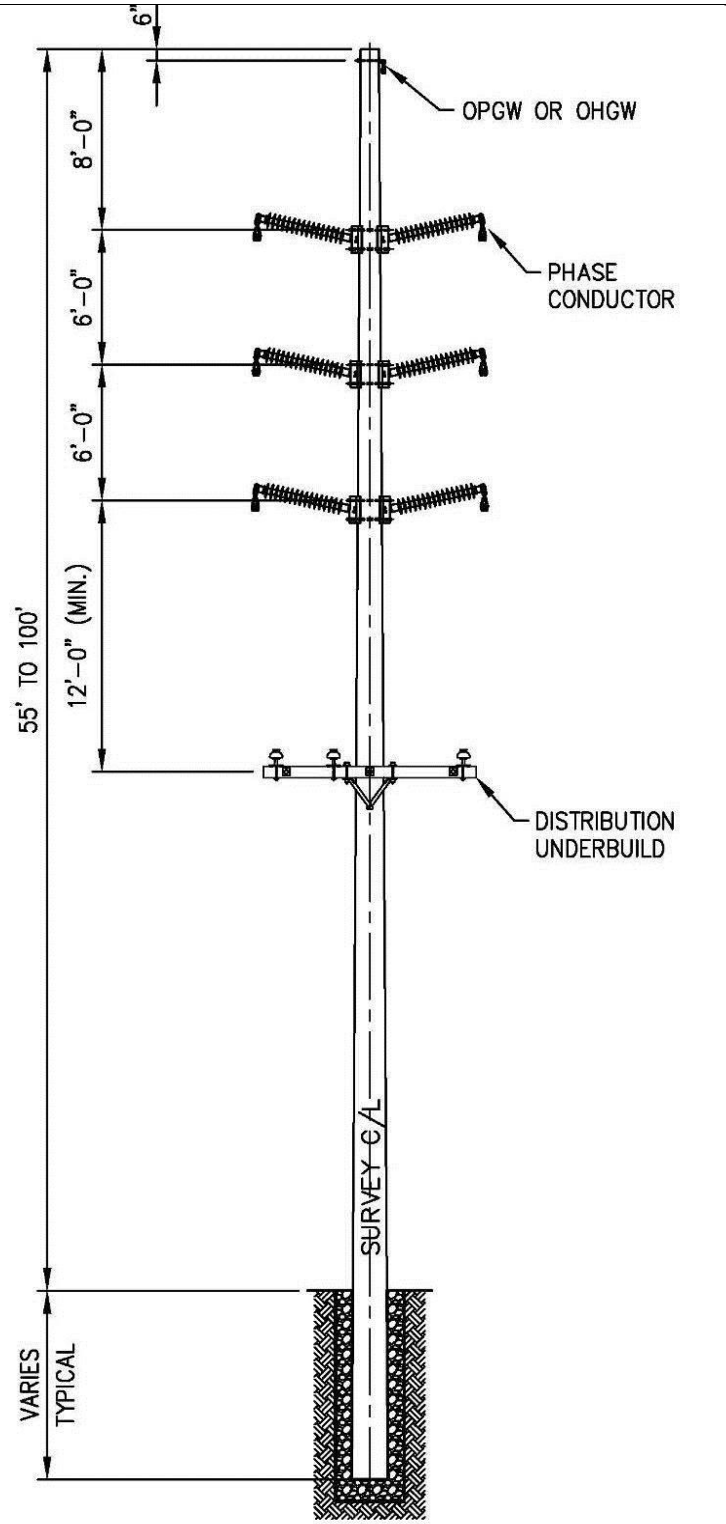


Figure 2-10. Proposed 138/69-kV Double-Circuit Steel Monopole Structure with 12.5-kV Distribution Underbuild

Structure and Conductor Clearances

Conductor phase-to-phase and phase-to-ground clearance parameters are determined in accordance with the Applicant's company standards and the NESC, ANSI C2, produced by the American National Standards Institute (ANSI). These documents provide minimum distances between the conductors and ground, crossing points of other lines and the transmission support structure, and other conductors, and minimum work clearances for personnel during energized operation and maintenance activities (Institute of Electrical and Electronics Engineers 2011). Typically, the clearance of conductors above ground is 29.5 feet for 500-kV lines, but where the line crosses land used for agricultural purposes, a minimum clearance of 35.5 feet would be used to allow for equipment clearance.

For the 230-kV line relocation section, the minimal clearance of conductors above ground is 27 feet. For the 138/69-kV double-circuit section, the 12.5-kV distribution conductor minimal clearance is 22 feet above grade.

Structure Foundations

The 500-kV single-circuit steel lattice structures each require four foundations, one on each corner of the lattice towers. The foundation style, diameter, and depth would be determined during final design and are dependent on structure loading conditions and the type of soil or rock present at each specific site. The preliminary design indicates the foundations for the single-circuit tangent lattice structures would be composed of steel-reinforced concrete drilled piers with a typical diameter of 4 feet and a depth of approximately 15 feet. For the 500-kV H-frame structures, each tangent structure would require two foundations, one for each pole that comprises the H-frame structure. Angle and dead-end structures would use a three-pole structure, each pole having its own foundation. The foundations would be steel-reinforced drilled piers with a typical diameter of 6 to 8 feet and a depth of approximately 25 to 40 feet.

For the 230-kV H-frame structures, each of the two poles for tangent structures would be direct-embedded. Typical direct-embedded foundation sizes would be approximately 5 feet in diameter and approximately 5 feet deep. The 138-kV monopole structures would be a combination of direct-embedded steel poles and self-supported poles on drilled pier foundations. Tangent structures would be direct-embedded steel poles in a single drilled boring, typically 5 feet in diameter and 15 feet deep. Angle and dead-end structures would be on steel-reinforced drilled pier foundations with a typical diameter of 5 to 6 feet and a depth of approximately 20 to 25 feet.

Typical foundation diameters and depths for the proposed structure families are shown in Table 2-2.

Table 2-2. Foundation Excavation Dimensions

Proposed or Alternative Structure	Holes per Structure	Typical Depth (feet)	Typical Diameter (feet)	Estimated Concrete Volume (cubic yards)
500-kV single-circuit – light tangent lattice structure	4	15	4	28
500-kV single-circuit – heavy tangent lattice structure	4	18	5	52
500-kV single-circuit – small angle lattice structure	4	16	6	68
500-kV single-circuit – medium angle lattice structure	4	21	6.5	104
500-kV single-circuit – medium dead-end lattice structure	4	28	7	160
500-kV single-circuit – heavy dead-end lattice structure	4	30	7	172
500-kV single-circuit two-pole tangent H-frame structure	2	25	6	53
500-kV single-circuit three-pole angle H-frame structure	3	30	7	129
500-kV single-circuit three-pole dead-end H-frame structure	3	40	8	224
230-kV double-circuit monopole structure	1	18	4	226
230-kV single-circuit two-pole tangent H-frame structure	2	12	5	NA
230-kV single-circuit three-pole angle H-frame structure	3	12	5	NA
230-kV single-circuit three-pole dead-end guyed structure	3	12	5	NA
138/69-kV double-circuit monopole tangent structure (direct-embedded)	1	15	5	NA
138/69-kV double-circuit monopole angle structure	1	20	5	15
138/69-kV double-circuit monopole dead-end structure	1	25	6	27

CONDUCTORS

The proposed conductor for the 500-kV lattice structure is 3-1519 KCM[3] aluminum conductor steel reinforced with trapezoidal aluminum wires (ACSR/TW) “Deschutes.” Each phase of the 500-kV three-phase circuit would be composed of three subconductors in a triple-bundle configuration. The individual 159 KCM conductors would be bundled in a triangular configuration with spacing of 20 inches between horizontal subconductors and 16 inches of diagonal separation between the top two conductors and the lower conductor. The triple-bundled configuration is proposed to provide adequate current carrying

[3]A thousand circular mils

capacity and to provide for a reduction in audible noise and radio interference as compared to a single large-diameter conductor. Each 500-kV subconductor would have a 45/7 aluminum/steel stranding, with an overall conductor diameter of 1.300 inches and a weight of 1.432 pounds per foot and a non-specular finish[4].

Where multiple conductors are used in a bundle for each phase, the bundle spacing would be maintained through the use of conductor spacers at intermediate points along the conductor bundle between each structure. The spacers serve a dual purpose: in addition to maintaining the correct bundle configuration and spacing, the spacers also are designed to damp out wind-induced vibration in the conductors. The number of spacers required in each span between structures would be determined during final design of the transmission line.

The proposed conductor for the relocated 230-kV transmission line is 795 KCM 26/7 ACSR “Drake.” Each phase of the 230-kV three-phase circuit would be composed of one conductor. Each conductor would have an overall diameter of 1.107 inches and a weight of 1.093 pounds per foot and a non-specular finish.

The proposed conductors for the 138/69-kV monopole structure lines are 397 KCM 26/7 ACSR “Ibis” (138-kV, one conductor per phase), 4/0 6/1 ACSR “Penguin” (69-kV, one conductor per phase), 2/0 ACSR “Quail” conductor (12.5-kV distribution, one conductor per phase plus neutral wire), and a 3/8 inch extra-high-strength (EHS) seven-strand shield wire at the top of the structures. Conductors would be aligned with typical vertical spacing of 8 feet between shield wire and 9- or 138-kV phase wires, 6 feet between phase wires, and a minimum of 12 feet between 138- or 69-kV phase wires and distribution wires.

OTHER HARDWARE

INSULATORS

Insulators are used to suspend each conductor bundle (phase) from the structure, maintaining the appropriate electrical clearance between conductors, the ground, and the structure. Dead-end insulator assemblies for the transmission lines would use an I-shaped configuration, which consists of insulators hung from either a structure dead-end arm or a dead-end pole in the form of an “I.” Insulators would be composed of grey porcelain or green-tinted toughened glass. The typical insulator assemblies for 500-kV steel lattice tangent structures would consist of an insulator string hung in the form of an “I” (Figure 2-5). Insulator assemblies for the 500-kV H-frame structure would consist of two insulators strings hung in the form of a “V” (Figures 2-6 and 2-7).

GROUNDING SYSTEMS

AC transmission lines such as the B2H Project transmission line have the potential to induce currents on adjacent metal structures such as transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. Induced current on these facilities occur

[4]Non-specular refers to a “dull” finish rather than a “shiny” finish.

to some degree during steady-state operating conditions and during a fault condition on the transmission line. For example, during a lightning strike on the line, the insulators may flash over causing a fault condition on the line and current will flow down the structure through the grounding system (i.e., ground rod or counterpoise) and into the ground. The magnitude of the current flows in the transmission line, the proximity of the adjacent facility to the line, and the distance (length) for which the two facilities parallel one another in proximity will vary.

The methods and equipment needed to mitigate these conditions would be determined through electrical studies of the specific situation. As standard practice and as part of the design of the B2H Project, electrical equipment and fencing at the station would be grounded. All fences, metal gates, pipelines, metal buildings, and other metal structures adjacent to the right-of-way that cross or are within the transmission line right-of-way would be grounded as determined necessary. If applicable, grounding of metallic objects outside the right-of-way also may occur, depending on the distance from the transmission line as determined through the electrical studies. These actions address induced currents to ground through ground rods, ground mats, and other grounding systems, thus reducing the effect that a person may experience when touching a metallic object near the line (i.e., reduce electric shock potential). Transmission line public health effects are discussed in Section 3.2.18.

Additional Minor Hardware

In addition to the conductors, insulators, and overhead shield wires, other hardware would be installed on the structure as part of the insulator assembly to support the conductors and shield wires. This hardware would include clamps, shackles, links, plates, and various other pieces composed of galvanized steel and aluminum.

A grounding system would be installed at the base of each transmission line structure that would consist of copper or copper-clad ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper lead. When the resistance to ground for a grounded transmission line structure is greater than a specified impedance value with the use of ground rods, counterpoise would be installed to lower the resistance to below a specified impedance value. Counterpoise consists of a bare copper-clad or galvanized-steel cable buried a minimum of 12 inches deep, extending from structures (from one or more legs of structure) for approximately 200 feet under the right-of-way.

Other hardware that is not associated with the transmission of electricity may be installed as part of the B2H Project. This hardware may include aerial marker spheres or aircraft warning lighting as required for the conductors or structures per Federal Aviation Administration (FAA) regulations[5]. Structures in proximity to airports and structure height are the determinants of whether FAA regulations would apply based on an assessment of wire/structure strike risk. The Applicant does not anticipate that structure

[5]U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular AC 70/7460-1K Obstruction Marking and Lighting, August 1, 2000; and Advisory Circular AC 70/7460-2K Proposed Construction of Alteration of objects that May Affect the Navigable Airspace, March 1, 2000.

lighting would be required because proposed structures would be less than 200 feet tall and would not be near airports that require structure lighting.

2.3.1.3 SUBSTATIONS

As stated previously, the northern terminus of the proposed transmission line would be the planned Longhorn Substation near Boardman, Oregon, and the southern terminus is the existing Hemingway Substation near Boise, Idaho.

The Applicant identified the need for an endpoint for the B2H Project in the area of the Boardman, Oregon, because it is the easternmost point at which the Applicant can feasibly interconnect to the Pacific Northwest power market. The proposed Longhorn Substation is on land BPA purchased from the Port of Morrow. For termination at the Longhorn Substation, the Applicant would install 500-kV circuit breakers, high-voltage switches, bus supports, and transmission line termination structures, a 500-kV series capacitor bank, and 500-kV shunt reactor banks. The 500-kV transmission line termination structures would be approximately 125 to 135 feet tall. A control house to accommodate the system-communications and control equipment would be constructed as needed. A new all-weather access road would be used to reach the site, and distribution power for the site would be supplied from the nearby existing system, as needed. Fiber-optic signal communication equipment would be installed.

The existing Hemingway Substation, located approximately 30 miles southwest of Boise, Idaho, just off Highway 78, currently serves as a hub for the Applicant's Treasure Valley load. The Hemingway Substation has been designed to accommodate the B2H Project as well as other future projects. No additional ground disturbance outside the current substation would be required, and no new access road would be needed for access to the Hemingway Substation. The B2H Project 500-kV bay would contain high-voltage circuit breakers and switches, bus supports, series capacitor bank, shunt reactor banks, and control equipment similar to that described for the Longhorn Substation.

A typical 500-kV substation is illustrated in Figure 2-11. Figure 2-12 is a photograph of a typical 500-kV station with multiple line connections.

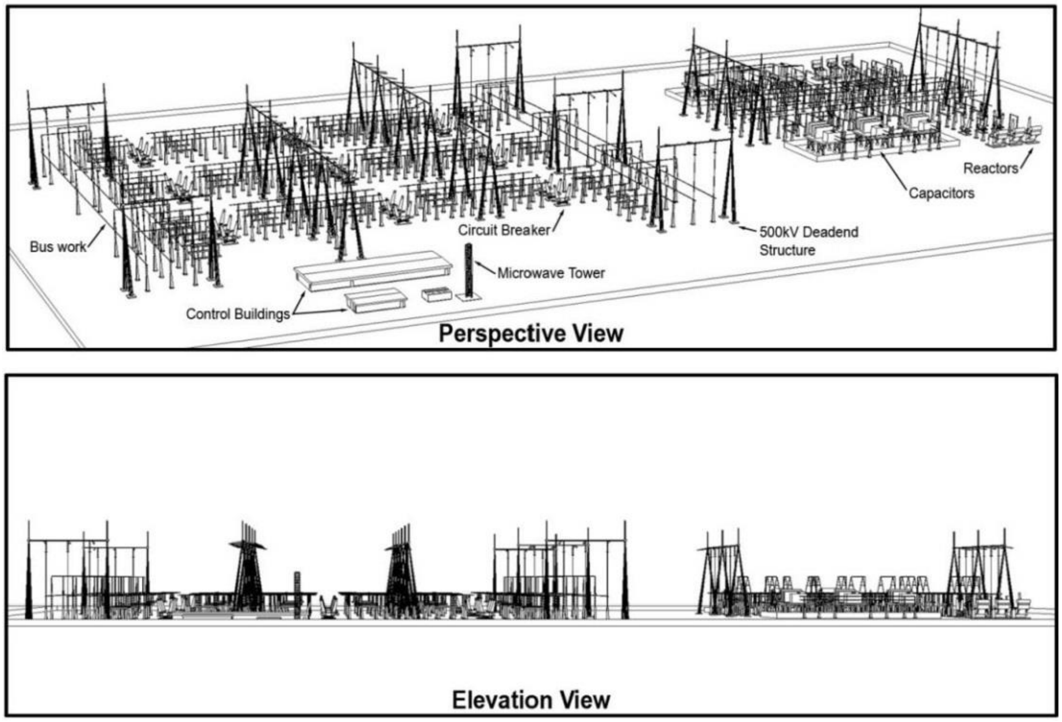


Figure 2-11. Typical 500-kV Substation

Figure 2-12. Typical 500-kV Substation

2.3.1.4 Communication System

To control the transmission line and manage the flow of electricity, a sophisticated internal communications system would be required. A major factor of the communications system is a fiber-optic line contained within one of the overhead grounding wires carried along the length of the transmission line. As the data signal is passed through the optical fiber cable, the signal degrades with distance. Consequently, signal communication sites (regeneration sites) are required to amplify the signals if the distance between substations or communications sites exceeds approximately 40 miles. As summarized in Table 2-1 a total of nine internal communications sites would be required for the Applicant's Proposed Action. Communication site spacing is approximately 40 miles, depending on access and proximity to local electric distribution lines. The typical site will be 100 feet by 100 feet, with a fenced area of 75 feet by 75 feet. A prefabricated concrete communications shelter with dimensions of approximately 12 feet by 32 feet by 9 feet tall will be placed on the site. Communications sites would be located on private and public lands.

Communications sites would consist of a communications shelter (building) and a standby generator with a liquid petroleum gas fuel tank, a fenced yard, an access road, and distribution power supply from the local distribution system. Two diverse cable routes (aerial and/or buried) from the transmission right-of-way to the equipment shelter would be required. Figure 2-13 illustrates the plan arrangement of a typical communications site.

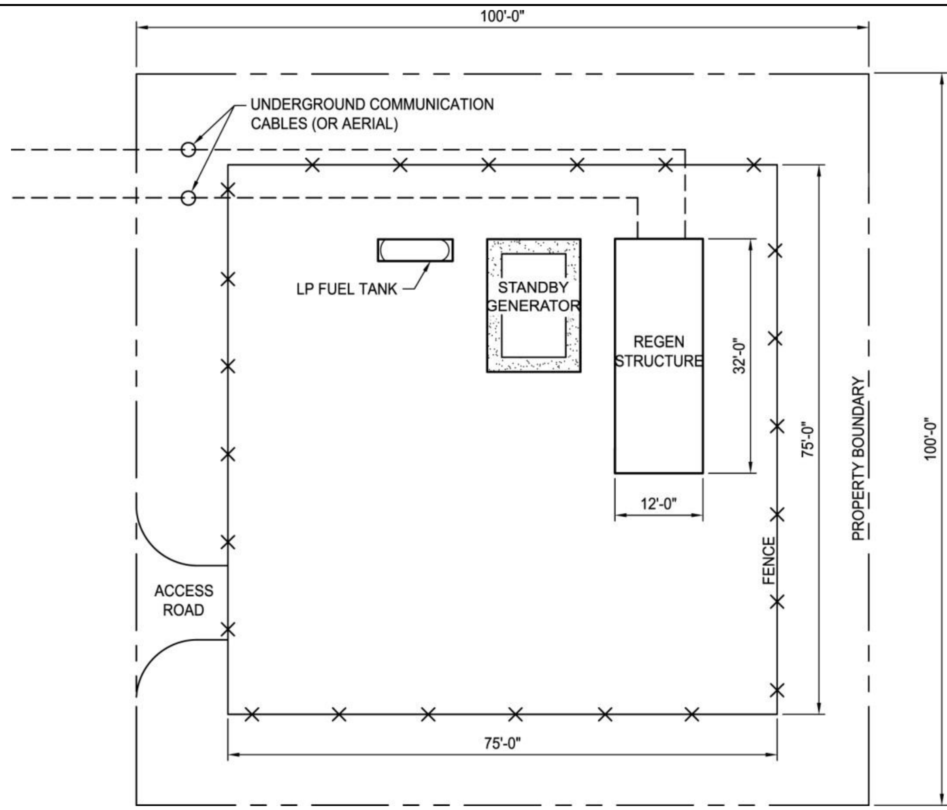


Figure 2-13. Typical Layout of Communication Station Site

OPTICAL GROUND WIRE

Reliable and secure communications for system control and monitoring is very important to maintain the operational integrity of the B2H Project and of the overall interconnected system. Primarily, communications for relaying and control would be provided via the optical ground wire (OPGW) that would be installed on the transmission-line structures; this path is intended for internal use by the Applicant. A second communication path (internal to the Applicant's system) would be provided over the Applicant's existing communication backbone system. No new microwave sites are planned for the B2H Project. Each 500-kV structure would have two lightning shield wires installed on the structure peaks. One of the shield wires would be composed of EHS steel wire with a diameter of 0.495 inch and a weight of 0.517 pound per foot. The second shield wire would be an OPGW constructed of aluminum, and would carry 48 glass fibers within its core. The OPGW would have a diameter of 0.646 inch and a weight of 0.407 pound per foot. The glass fibers inside the OPGW shield wire would provide optical data transfer capability among the Applicant's facilities along the fiber path. The data transferred are required for system control and monitoring.

POTENTIAL FOR CATHODIC PROTECTION

Siting a high-voltage transmission line in proximity and parallel to a metallic underground pipeline may require installation or upgrade of protective equipment to mitigate potential corrosion of the pipeline from induced voltage caused by the transmission line. Installation of the protective equipment, if not already existing, would require additional infrastructure and ground disturbance associated with the B2H Project[6]. As a general siting principle, the Applicant carefully scrutinized siting the proposed transmission line parallel to existing buried pipelines. The cost savings and potential for reduced construction impact of siting adjacent to existing pipelines is weighed against the impact on the underground pipelines and potential mitigation to address the impacts. This has been done to minimize disruption or required modification to existing protective systems and their supporting infrastructures. As the Applicant continues to consider new constraint information, the Applicant would continue to work to avoid interference with underground pipelines as well as other types of existing infrastructure to the maximum extent possible. Where it is not possible to move the proposed transmission line alignment away from a pipeline, the Applicant would work with the owner/operator of the pipeline to evaluate the interference from the B2H Project and see that the necessary protection system is put In place to protect the pipeline. In the B2H Project area, there are few opportunities for the proposed transmission line to parallel large-diameter pipelines.

2.3.1.5 RELATED AND SUPPORTING FACILITIES

Permanent and temporary related and supporting facilities include access roads, multi-use areas, pulling-and-tensioning sites, fly yards within some pulling-and-tensioning sites, and distribution lines to the communication stations.

[6] Where buried pipelines run parallel to a transmission line, they typically are protected by an impressed current cathodic protection (ICCP) system, which requires buried anodes connected to a direct-current power source, if not already installed by the pipeline owner/operator, will generally require construction of a new distribution line to serve the ICCP.

Access Roads

Access and service roads required for the B2H Project are described as three major types: (1) new roads (including new primitive roads or new bladed roads); (2) existing roads that will require substantial modification; and (3) existing roads that would not require substantial modification. To the extent possible, existing roads would be used in their present condition without improvements. Where applicable, the Applicant would conform to land-management–agency manuals for construction and maintenance.

Following is a description of the three access road types.

New roads proposed to be constructed in connection with the B2H Project include:

- New primitive roads would meet the following criteria:
  - Created by direct vehicle travel over native material and existing vegetation
  - Disturbance may include clearing of large woody vegetation and other obstructions to ensure safe vehicle operation
  - Generally would be present on the landscape as two-track roads leaving no disturbance beyond the edge of the travel surface
  - May require intermittent maintenance work to support continued safe vehicle passage during construction
  - Typical construction disturbance is 16 feet wide; the operational travelway width is 14 feet, which, after use for maintenance over the years, would become a 10-foot-wide two-track roadway
- New bladed roads would meet the following criteria:
  - Construction of new road prism across side slope greater than 8 percent or over rough and uneven terrain
  - Typical construction disturbance is 16 feet wide, but can be up to 35 feet wide as dictated by terrain and soil conditions; the operational width is 14 feet wide, which, after being reseeded and used over the years, would become a 10-foot-wide two-track roadway

Existing roads that would require substantial modification for construction and operation of the B2H Project satisfy the following criteria:

- Field reconnaissance and aerial photographs indicate that current road conditions are not adequate for construction of the B2H Project
- Proposed repair and/or construction activities would (1) increase the width of the existing road prism; (2) change the existing road alignment; (3) use materials inconsistent with the existing road surface; and/or (4) change the existing road profile
- Repairs using existing road surface materials within the existing road prism that would not change the road profiles are considered substantial modifications if they comprise greater than 20 percent of the road surface area defined by road prism width and longitudinal distance over a defined road segment
- Typical construction disturbance is 16 to 35 feet wide; the operational width is 14 feet wide.

After construction is complete, any new roads developed for the B2H Project connecting to multi-use areas would be removed and restored to preconstruction conditions, unless the landowner requests otherwise.

Existing roads that do not require substantial modification include existing paved or all-weather surfaced roads that meet the Applicant's road standards for a minimum operational width of 14 feet. These roads include existing maintained paved or all-weather surfaced roads that are able to be used in their current condition. It is anticipated that the use of these roads would not cause additional new disturbance outside of an established disturbed area. However, these roads could include regular maintenance to make the road passable for construction. Regular maintenance could include, but would not be limited to, minor blading activities, repair of washed out areas, wash-boarded areas, depressions requiring graveling, approach installation, and other minor improvements.

Waterbody Crossings with Access Roads

Access roads would be designed and constructed to minimize disruption of natural drainage patterns including perennial, intermittent, and ephemeral streams. As the engineering plans are advanced for new access roads, site-specific crossings would be designed. The Applicant would consult with the land-managing agency or landowner (if applicable) regarding relevant standards and guidelines pertaining to road-crossing methods at waterbodies and would be designed to meet a minimum of a 100-year flood event. The Applicant has committed that no vehicles and/or equipment would cross through streams supporting fish species listed as threatened, or endangered under the Endangered Species Act of 1973 (ESA) . Consultation would include site assessment, design, installation, and maintenance. New crossings of canals, ditches, and perennial streams would be avoided to the extent practicable by using existing crossings, but some new crossings are anticipated. The performance of stream crossings would be monitored for the life of the access road and would be maintained or repaired as necessary to protect water quality.

Four types of waterbody crossings potentially could be used as part of the B2H Project:

Type 1 – Drive-through with or without minor grading and/or minimal fill to match existing stream profile

Crossing of a seasonally dry channel.

Type 2 – Hardened drive-through ford

Crossing of a channel that includes grading and stabilization. Stream banks and approaches would be graded to improve vehicle passage and would be stabilized with rock, geotextile fabric, or other erosion-control devices. The streambed would in some areas be reinforced with coarse rock material, where approved by the land-management agency, to support vehicle loads, prevent erosion, and minimize sedimentation into the waterway. Rock would be installed in the streambed such that it would not raise the level of the streambed, thus allowing continued movement of water, fish, and debris. Fords may be constructed in small, shallow streams (less than 2-foot stream depth and 20-foot active stream width) and rocky substrates. Fords also may be appropriate on wider streams that have a poorly defined channel that often changes course from excessive bedload. A ford crossing results in an average disturbance profile of 25 feet wide (along the waterbody) and 50 feet long (along the roadway) for 1,000 square feet, or 0.02 acre at each crossing. Disturbance amount is estimated based on the need to move equipment into the riparian area to build the 14-foot-wide operational surface, as well as to protect the area from erosion by adding armoring.

Type 3 – Culvert

Crossing of a stream or seasonal drainage that includes installation of a culvert and a stable road surface established over the culvert for vehicle passage. Culverts would be designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist, where required by the land-management agency, would recommend placement locations; culvert gradient, height, and sizing; and proper construction methods. Culvert design would consider bedload and debris size and volume. The disturbance footprint for culvert installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the road) for 7,500 square feet, or 0.17 acre at each crossing. Ground-disturbing activities would comply with agency-approved best management practices. Construction would occur during periods of low flow. The use of equipment in streams would be minimized. All culverts would be designed and installed to meet desired riparian conditions and fish passage requirements, as identified in applicable land-use-management plans. Culvert slope would not exceed stream gradient. Typically, culverts would be buried partially in the streambed to maintain streambed material in the culvert. Sandbags or other nonerosive material would be placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment-control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and approaches may be stabilized with rock or other erosion control devices.

Type 4 – Channel-spanning structures including fish passage

Crossing of a waterbody identified as containing a sensitive fish species that includes installation of a large-diameter culvert, arch culvert or short-span bridge and a stable road surface established over the structure for vehicle passage. Channel-spanning structures would be designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist would recommend placement locations; structure gradient, height, and sizing; and proper construction methods. The typical disturbance footprint for channel-spanning structures averages 60 feet wide (along the waterbody) and 150 feet long (along the road) for 9,000 square feet, or 0.2 acre at each crossing.

Wetland Crossings with Access Roads

During construction and for routine and emergency operations, access across wetlands to individual structure locations may be necessary. Selection of final wetland crossing techniques would be based on final access road alignment and wetland characteristics. Techniques that would be considered include the following:

Constructing at-grade roads with geotextiles and road materials for water through-flow

This type of road would be below water during certain times of the year, which would make locating the roads difficult, and the depth of the water over the drivable surface may make travel over the submerged road surface impractical or not feasible.

Limiting structure access across wetlands to dry or frozen conditions, along with the use of low-ground-pressure tires or specialized tracked vehicles

Construction of ice roads in wetlands involves using lightweight equipment such as snowmobiles to tamp down existing snow cover and vegetation to allow penetration of frost into the wetland soils. This operation would be followed by packing with heavier tracked equipment such as Bombardiers or wide-tracked dozers. The window of weather cold enough to allow for this technique is short, thereby restricting operation and maintenance activities to the winter season only.

Installing temporary matting materials to allow access for heavy vehicles and equipment

The mats typically come in the form of heavy timbers bolted together or interlocking pierced-steel planks. Mats spread the concentrated axle loads from equipment over a much larger surface area, thereby reducing the bearing pressure on fragile soils. However, mats are less effective when standing water is present.

Constructing raised fill embankments for permanent above-grade access roads in wetlands such that the travel surface is higher in elevation than the ordinary high-water level

The construction of above-grade access roads would accommodate the types of equipment described above and would be the most flexible for construction. All waterbody and wetland disturbances would be completed under the terms of a USACE Clean Water Act Section 404 permit, the National Pollutant Discharge Elimination System Construction Stormwater Permit (Clean Water Act 402), an ODSL Removal-Fill Permit, and State 401 water quality certification requirements that govern activities within any waters of the United States. In Idaho, there is an additional requirement for a stream channel alteration permit.

Using helicopters for construction access to avoid wetlands

Transmission tower structures proposed for the B2H Project could be erected partially by helicopter, if needed. However, in each case, ground-based vehicles would still be needed and therefore would not eliminate the need for an access road to each structure to complete construction or to perform inspections and live-line maintenance activities. In sensitive resource areas, the agencies may require no access roads, access roads that are overland drive and crush only, or limited in the amount of improvement that will be allowed.

MULTI-USE AREAS

Construction of the B2H Project would begin with establishing multi-use areas, which would serve as field offices; reporting locations for workers; parking space for vehicles and equipment; and sites for material delivery and storage, fabrication assembly of structures, cross arms and other hardware, concrete batch plants, and stations for equipment maintenance. Multi-use areas, each of which is about 30 acres in size, would be located approximately every 15 miles along the transmission line route. The layout of a typical multi-use area is illustrated in Figure 2-14. Multi-use areas may require an approved land-use permit through county planning departments. Some activities associated with the multi-use areas may require additional permitting. (For example, a concrete batch plant, depending on the zoning, may require a conditional use permit through the county planning department.)

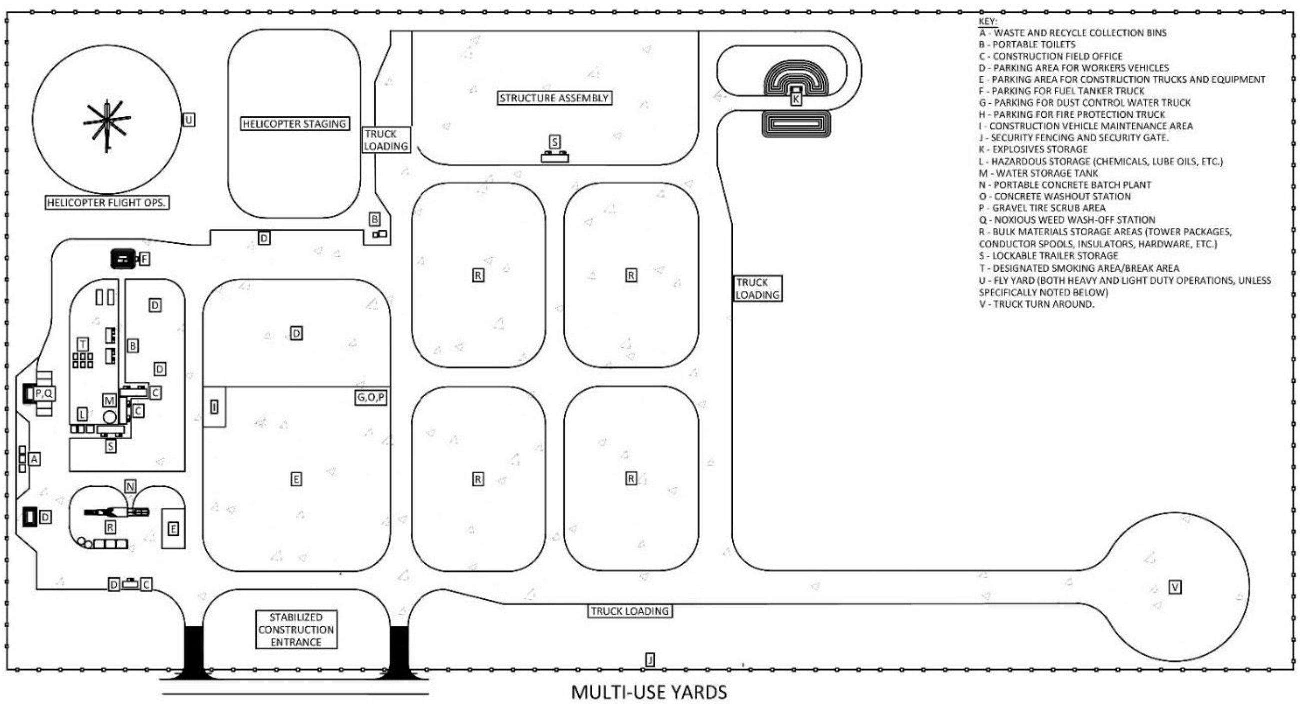


Figure 2-14. Layout of Multi-use Area

Helicopter operations may be staged from multi-use areas. Construction activities potentially facilitated by helicopters may include delivery of construction laborers, equipment, and materials to structure sites; structure placement; hardware installation; and wire-stringing operations. Helicopters also may be used to support the administration and management of the B2H Project by the Applicant, the construction contractor, or both. Where construction access by truck is not practical due to steep terrain, all-terrain-vehicle trails may be used to support maintenance activities. The use of helicopter construction methods for the B2H Project would not change the length of the access-road system required for operating the B2H Project because vehicle access is required to each structure site regardless of the construction method employed. During construction, gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be stored at multi-use areas. These products would be used to fuel, lubricate, and clean vehicles and equipment and would be transported to multi-use sites in containerized trucks or in other federally or state-approved containers. Enclosed containment would be provided for petroleum products and wastes and petroleum-related construction waste would be removed to a disposal facility authorized to accept such materials. Fuel and chemicals would be properly stored to prevent drainage or accidents. Where required, preventive measures, such as the use of vehicle drip pans for overnight parking areas, may be implemented. Routine visual inspection for presence of petroleum leaks would be required for vehicles. Diesel fuel tanks would be located at the multi-use areas for vehicle and equipment fueling. Each fuel tank would be located within secondary containment and each station would be equipped with a spill kit. When refueling on right-of-way is necessary, refueling would take place away from waterways. Accidental release of hazardous materials would be prevented or minimized through proper containment of these substances during use and transportation to the site. A Spill Prevention, Containment, and Countermeasure (SPCC) Plan would be prepared for all hazardous materials. All hazardous and dangerous materials would be stored and secured in accordance with the appropriate regulations.

During operations, no fuels or potentially hazardous, such as general lubricants, general cleaners, ethylene glycol (antifreeze), vehicle fuel, and herbicides for weed control would be stored on the right-of-way. When used, they would be transported and disposed of in accordance with applicable local, state, and federal environmental laws and regulations, and product labels as appropriate. At the communication stations, liquid propane would be stored in approved tanks.

Multi-use areas typically would be fenced and their gates locked. Security guards would be stationed where needed. In some cases, the multi-use area may need to be scraped by a bulldozer and a temporary layer of rock laid to provide an all-weather surface. Unless otherwise directed by the landowner, the rock would be removed from the multi-use area upon completion and the area would be restored.

PULLING-AND-TENSIONING SITES

Pulling-and-tensioning sites would be required every 1.5 to 2.0 miles along the right-of-way and at angle points greater than 30 degrees, and would require approximately 5 acres at each end of the wire section to accommodate required equipment.

The pulling-and-tensioning sites for the potential 230-kV and 138/69-kV line relocation and the 230-kV double-circuit line (to replace the BPA 69-kV line) would be required approximately every 1 to 2 miles along the right-of-way and would require approximately 1.2 acres each to accommodate required equipment.

Equipment at sites required for pulling-and-tensioning activities would include tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment.

A few pulling-and-tensioning sites are designated as light-duty fly yards. Light-duty fly yards are similar to the fly yards located in the multi-use areas but are smaller in size (Figure 2-15). All the equipment and activities that occur at a multi-use area also may occur at a light-duty fly yard. The exception would be that no oil and gas or explosive storage would occur and no batch plants would be located at the light-duty fly yards within the pulling-and-tensioning sites. The light-duty fly yards would be located within specific pulling-and-tensioning sites along the B2H Project where the spacing between multi-use areas is too great. The light-duty fly yards would be approximately 5-acre sites spaces approximately 15 miles apart.

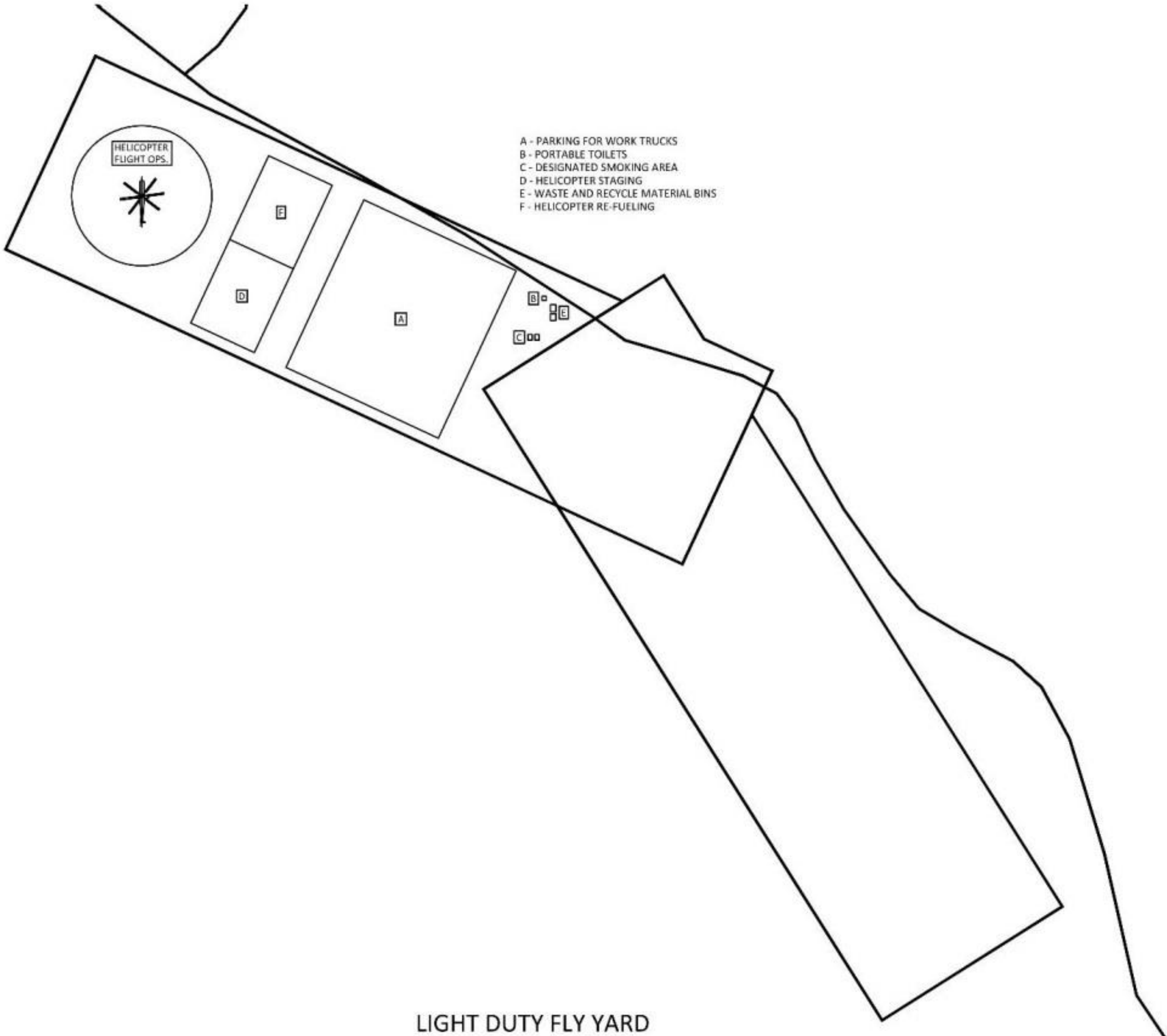


Figure 2-15. Layout of Light-Duty Fly Yard on Pulling-and-Tensioning Site

2.3.2 SYSTEM CONSTRUCTION

The following section and subsections describe the activities that would be associated with construction, operation, and maintenance of the B2H Project, including environmental compliance, geotechnical investigation, construction schedule and seasons, and typical construction, operation, and maintenance activities.

Design, construction, operation, and maintenance of the B2H Project would meet or exceed requirements of the NESC, U.S. Department of Labor, Occupational Safety and Health Administration standards, and the Applicant’s requirements for safety and protection of landowners.

The activities described in this section would be refined during detailed design and engineering once a route has been selected for construction. Refinements would be either (1) consistent with the outcome of the impact assessment and mitigation planning disclosed in this EIS or (2) additional NEPA review would be required.

2.3.2.1 Environmental Compliance

Once a route is selected for construction and prior to commencement of construction, the POD—a detailed plan for construction, operation, and maintenance of the B2H Project—would be completed by the Applicant in collaboration with the agency interdisciplinary team and cooperating agencies.

The POD provides the direction to the Applicant's construction personnel, construction contractors and crews, compliance inspection contractor, environmental monitors, and agency personnel regarding specifications for construction. The POD also would provide direction to the agencies and the Applicant's personnel for operation and maintenance of the B2H Project. The POD provides background information including description of construction, operation, and maintenance activities; description of the Applicant's and agencies' roles and responsibilities; and description of environmental protection measures (e.g., design features of the B2H Project for environmental protection [Table 2-7, Section 2.3.4], selective mitigation measures [Table 2-13, Section 2.5.1.1]), and several implementation plans (Table 2-3). The final Applicant compensatory mitigation plan also would be part of the final POD.

To enable the affected federal agencies to approve and sign the ROD(s) and grant right-of-way, the POD must be substantially developed to a level of completion to satisfy the NEPA. Since design and engineering of the B2H Project will not be completed at the time of the ROD, the draft POD will be based on the information and data, including design features and mitigation measures, carried forward from the EIS, and the final Applicant's compensatory mitigation plan. Completion of the POD would be a condition of signing the ROD(s) and granting any federal land-use authorization. Notice to proceed with construction would not be issued until the stipulations of the right-of-way grant and approved final POD are satisfied. Other agencies also would condition their final authorizations (e.g., special use authorization) on completion of an acceptable POD, including an approved compensatory mitigation plan.

A preliminary POD submitted in November 2011 contains the framework of 12 implementation plans that include proposed design features and mitigation measures to reduce or avoid environmental impacts (unless otherwise directed by private landowners) (Idaho Power Company 2011). These framework plans are briefly described in Table 2-3.

Table 2-3. Framework Plan Descriptions	
Framework Plan	**Description**
Framework Blasting Plan	Includes types of explosives and storage and security, as well as general use of explosives including the procedures and safety measures for blasting activities and notification requirements
Framework Reclamation Plan	Includes site-specific construction mitigation, reclamation, and revegetation measures for each land management area crossed by the right-of-way within BLM-managed, National Forest System lands, and other federal lands. It would combine the Applicant's environmental protection measures with site-specific mitigation developed in consultation with the BLM, U.S. Forest Service (USFS), and other federal agencies. Some measures would apply project wide, while others would be designed for specific areas. These measures also would apply to state and private land.
Framework Plant and Wildlife Conservation Measures Plan	Presents the measures proposed by the Applicant for avoidance and minimization of impacts on special status plant and wildlife species as related to construction activities for the B2H Project and would outline specific conservation measures to be implemented if state or federally listed species, BLM-sensitive species, or USFS special status species or their habitats are identified within or adjacent to the B2H Project right-of- way.
Framework Agricultural Protection Plan	Includes measures intended to mitigate or provide compensation for agricultural impacts that may occur due to construction of the B2H Project. The measures are intended to be implemented on partially or wholly owned private agricultural land unless directed otherwise by the landowner. Agricultural land will be defined to include that which is annually cultivated or rotated cropland; land in perennial field crops, orchards, or vineyards; land used for small fruit, nursery crops, greenhouses, or Christmas trees; improved pasture; hayfields; and land in the Conservation Reserve Program.
Framework Fire Prevention and Suppression Plan	Includes measures to be taken by the Applicant and its contractors to ensure that fire prevention and suppression are carried out in accordance with federal, state, and local regulations. The plan would address the specific requirements of the USFS and BLM handbooks, and provide environmental protection measures for fire management on privately owned lands. Measures would be identified in this plan that apply to work within the B2H Project area defined as the right-of-way, access roads, all work and storage areas (whether temporary or permanent), and other areas used during construction and operation of the B2H Project.
Framework Operations, Maintenance, and Emergency Response Plan	Includes measures to be employed while conducting routine, corrective, and emergency operations and maintenance activities. Measures identified would be in compliance with applicable state and federal laws and policies; would ensure consistency across and within federal jurisdictions; and would allow for the Applicant to access the transmission line and ancillary facilities in a timely, cost-effective, and safe manner. These measures also would apply to state and private land. At the end of the useful life of the B2H Project, if the facility is no longer required, the transmission line would be removed from service. Before removal, a decommissioning and restoration plan covering planned activities would be prepared for review and approval, and the appropriate level of NEPA analysis would be conducted.
Framework Traffic and Transportation Management Plan	Includes measures that require compliance with federal policies and standards relative to planning, siting, improvement, maintenance, and operation of roads for the B2H Project. These measures also would apply to state and private land.

Table 2-3. Framework Plan Descriptions

Framework Plan	Description
Framework Stormwater Pollution Prevention Plan	Includes measures for temporary and permanent erosion and sediment control that would be used during construction, operation, and maintenance of the transmission line and ancillary facilities.
Framework Spill Prevention, Containment, and Countermeasures Plan	Includes measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response and incident reporting, and training requirements.
Cultural Resources Protection and Management Measures	Includes the procedures undertaken to inventory, evaluate, and protect cultural resources. It describes the treatment of any eligible or listed resource that cannot be avoided, and procedures for handling inadvertent discoveries during construction, operation, and maintenance. These may include, but not limited to, the Programmatic Agreement, Historic Properties Management Plan, and Inadvertent Discovery Plan.
Visual Resources Protection Plan	Includes measures for minimizing visual impacts and address specific BLM and USFS Visual Resource Management program requirements, and other applicable standards. These measures also would apply to state and private land.
Biological Resources Habitat Protection and Monitoring Plan	Includes specific conservation measures to be implemented in the event state or federally listed species, BLM-sensitive species, or USFS-sensitive species are identified along the B2H Project route during surveys. Measures identified in the plan would be specific to the protection of these species and take priority over measures identified in other plans. (May include a nest Management Plan and Adaptive Management Plan)
Mitigation Framework	Includes compensatory mitigation actions for reasonably foreseeable remaining effects (i.e., residual effects) on important, scarce, or sensitive resources from the B2H Project.

Table Source: Revised POD (Idaho Power Company 2011).

The Applicant would be responsible for ensuring that its contractors and employees implement the design features, mitigation measures, and framework plans. The federal agencies with jurisdictional responsibilities would monitor for implementation of the design features, mitigation measures, and framework plans. For this monitoring, the agencies would use a compliance inspection contractor (CIC) to ensure that the measures prescribed in the EIS and final POD are implemented and are achieving the desired resource protection results on lands of all jurisdictions.

For some resources, such as biological and cultural resources, pedestrian surveys using agency-approved protocols would be required prior to construction. The survey plans would be based on the final design of the B2H Project. The survey results would be reviewed and approved by the agencies and then used by the agencies to refine the mitigation requirements and further inform the final POD.

As mentioned, the POD would be developed by the Applicant in collaboration with the agency interdisciplinary team and cooperating agencies consisting of federal, state, and county agencies having jurisdictional or regulatory responsibilities and/or specialized knowledge for the B2H Project. Although the federal agencies do not have authority over state or private land, the federal agencies have an obligation to disclose in the EIS the consequences on nonfederal lands from their decisions. However, the federal agencies have an obligation to enforce the requirements of the National Historic

Preservation Act and the ESA to protect important historic properties and threatened and endangered species, respectively, regardless of land jurisdiction or ownership.

The provisions of the POD would be applied to federal land, state land, and private land, as required by state law or through private landowner easement negotiations. Documentation of state or landowner decisions regarding the provisions of the POD would be documented and provided to the CIC as a variance. Participation in the development of the POD by state and county cooperating agencies would give them the opportunity to concur with and adopt the terms and conditions of the POD to facilitate state and county licensing or permitting. For the B2H Project, a draft POD that is based on information and data carried forward from the EIS would be required as a condition of signing the ROD. This POD would be incorporated by reference into the ROD, and issued based on the analysis in this EIS. Any refinements in the POD that are consistent with the impacts analysis in the EIS would not require a supplemental EIS.

When resource pedestrian surveys have been completed and the resulting reports have been approved by the agency (or agencies) responsible for overseeing the surveys, refinements to environmental protection measures in the final POD would be incorporated and the agencies would be asked to review the refined, final POD. The approved, final POD is a requirement to receive a notice to proceed for any surface disturbance and would be referenced in any federal right-of-way grant, special-use authorization, license agreement, etc. Thereby, the Applicant agrees to be bound by all terms and conditions, stipulations, and mitigation, including a compensatory mitigation plan, prescribed in such documents. Any change to the POD after issuance of the notice to proceed would require review and approval through the variance process described in the POD or, if the change is not within the analysis for the B2H EIS or other NEPA document, additional NEPA analysis may be required.

2.3.2.2 Land Requirements and Construction Disturbance

The Applicant proposes to acquire a permanent 250-foot-wide right-of-way for the 500-kV single-circuit sections of the proposed B2H Project, except along the west side of Bombing Range Road where a 90-foot-wide right-of-way is needed, a 125-foot-wide right-of-way for the 230-kV transmission line relocation and a 100-foot-wide right-of-way for the 138/69-kV transmission line relocation and rebuild. The right-of-way widths are based on maintaining sufficient clearance during a high wind event when the conductors could be blown toward the right-of-way edge and on providing sufficient space within the right-of-way to perform transmission line maintenance. For the purposes of assessing impacts, it is assumed that all areas within the right-of-way could be disturbed temporarily during construction.

During construction a temporary easement (for private lands) or short-term right-of-way would be required from landowners and land-management agencies for temporary disturbance. Temporary disturbances, such as material laydown yards, helicopter fly yards, and concrete batch plants, only occur during construction. The land area needed for operations would be smaller than the area needed during construction, because permanent disturbances for the proposed transmission line would be limited to tower pads, communications sites, and access roads. These areas are typical, and the actual land areas needed for construction and operation of the B2H Project would be determined during final engineering. Design features, best management practices, and selective mitigation measures would be included in the preliminary POD and attached to the ROD and if appropriate, included in any subsequent right-of-way grant or special-use authorizations issued for the B2H Project. The final POD would be completed and approved when final engineering is complete and all environmental pedestrian surveys are complete and approved by regulatory agencies**.** A notice to proceed would be required prior to any surface-disturbing activity.

2.3.2.3 Geotechnical Investigation

Geotechnical investigations would be conducted within the transmission line right-of-way. The purpose of the geotechnical investigation is to collect information regarding subsurface stability, which would be used in the final design of each transmission structure and foundation to ensure the system is designed and constructed to be safe, reliable, and cost efficient.

The geotechnical investigations would consist of boring and sampling soils to a typical depth of 50 to 60 feet below the ground surface; however, some borehole depths may exceed 60 feet depending on local soil conditions. The boreholes would have a diameter of approximately 8 inches and typically would be backfilled with boring cuttings from the borehole and on-site soils. About 70 boreholes would be spaced approximately 3 miles apart. Geotechnical investigations would use existing access roads and overland access routes as identified in the preliminary POD.

Helicopter-transported drill rigs may be used for geotechnical exploration in areas where existing roads do not provide adequate access or where overland travel is prohibited. Geophysical exploration techniques may be employed in areas where drilling is impractical to assist in subsurface characterization. Geophysical exploration techniques use surface vibration and instrumentation to identify subsurface soil and rock layers.

The Applicant has conducted a preliminary geotechnical desktop study. In the final geotechnical investigation program for the transmission line, areas of concern identified in the preliminary geotechnical desktop study would be field-reviewed to determine validity of the data sources used in the study's report. Borings would be planned according to the Applicant's geotechnical investigation standards, with additional boring locations dictated by geotechnical desktop study. Certain boring locations may be eliminated if it is determined that soil conditions would not vary or borings from adjacent transmission lines could be used for design. Geotechnical investigation for the B2H Project is anticipated to consist of site examinations, geotechnical drilling, select geophysical surveys, and laboratory testing.

The Applicant would prepare a more detailed summary of the anticipated boring program, which would be reviewed and approved by the BLM and applicable agencies for sufficiency of biological and cultural surveys and approvals prior to issuance of any short-term right-of-way grant or use authorization. The detailed summary of the anticipated boring program would include the following:

- Land ownership
- Site substantiated access information

- Anticipated drill rig type and drilling method
- Anticipated soil types and subsurface lithology
- Anticipated access requirements

Geotechnical Drilling Activities

Drilling equipment is commonly mounted on road-legal two-wheel-drive and four-wheel-drive trucks, tracked vehicles, oversized-tire all-terrain vehicles, or platform rigs. The type of drilling rig used is dependent on the access difficulties to the boring location and the sampling methods required. Platform rigs can be transported in pieces to the site via helicopter. Other vehicles and equipment normally mobilized to each boring location include a water truck and/or support vehicle, large air compressor, geologist's pickup truck or utility vehicle, and possibly another support truck. Table 2-4 is a summary of the geotechnical drilling activities, methods, and equipment that could be used during the geotechnical investigations.

Table 2-4. Summary of Geotechnical Drilling Types, Methods, and Equipment

Drilling Type	Drilling Method	Support Equipment
Hollow-stem auger	Dry (mechanical)	Drill rig, vehicle for rods and equipment, track-mounted water truck, crew vehicle
Mud rotary	Wet (pumped water)	Drill rig, vehicle for rods and equipment, water truck, crew vehicle[1]
Air rotary	Dry (compressed air; air hammer)	Drill rig, vehicle for rods and equipment, towed air compressor, crew vehicle
Sonic	Dry (sonic vibrations)	Drill rig (larger than others), vehicle for rods and equipment, crew vehicle
Under-reamer (ODEX System)	Dry (compressed air; air hammer)	Vehicle for rods and casing, air compressor, crew vehicle
Cone penetration test	Dry	Truck or track-mounted all terrain rig, support truck for equipment, crew vehicle

Table Note: [1]For the construction of the B2H Project, the Applicant has committed to using water that would be procured from existing municipal sources, from commercial sources, or under a temporary water-use agreement with landowners holding existing water rights.

2.3.2.4 Construction Schedule and Seasons

The Applicant would be ready to mobilize once notices to proceed are issued. Final engineering surveys, coordinated with landowners, and detailed design would determine the exact locations of towers, access roads, and other B2H Project features before the start of construction, and would be included in the final POD. The Applicant plans to hire contractors to complete construction work in accordance with agency requirements and industry performance standards. The overall construction period, including construction of access roads, transmission line, substation facilities, and post-construction clean-up, would be approximately 3 years from receipt of a notice to proceed, depending on a number of factors such as weather, seasonal restrictions, and availability of labor and materials.

The B2H Project would be built in two sections or "spreads," both spreads would be under construction concurrently.

Although the construction rate of progress would be reduced in the winter, the Applicant has planned an aggressive schedule, and it is anticipated that construction would continue through the winter months in the lower-elevation areas, as weather permits. In the higher-elevation areas, winter storms and snow would limit access to the right-of-way; for example, in the Blue Mountains. In these areas, it is expected that construction would be suspended on some portions of the right-of-way during the peak winter months and construction resources would be either demobilized or shifted to other areas of construction. Design features to address wet and winter conditions are and will be addressed further in the POD.

Environmental issues such as seasonal use of wildlife ranges, nesting, soil and water conditions and others also may affect construction scheduling. Seasonal restrictions on construction activity would be implemented, unless specific exemptions are granted in an Adaptive Management Plan, in accordance with agency policy and management plans, to avoid and minimize effects on wildlife. Potential seasonal restrictions and buffers vary by species and are described in Appendix B of this EIS and the wildlife, fish, and vegetation subsections of Chapter 3. As required, biological surveys for sensitive species would be conducted and survey results and mitigation recommendations would be approved before construction activities commence. Data gathered through these surveys would be used to determine the site-specific buffers and seasonal restrictions to implement. Approval to proceed would be granted through a notice to proceed.

2.3.2.5 Right-of-Way and Site Preparation

Within the right-of-way, vegetation would be removed to the extent needed to ensure adequate ground clearances. Individual trees and snags (hazard trees) that pose power-outage or fire risks to conductors or structures also would be removed. Felled trees and snags would be left in place as sources of large woody debris in and/or near waterways, as habitat or to meet other resource needs. Felled green trees would be limbed to reduce fire hazards (Figure 2-16). All timber cleared from the right-of-way on National Forest System land would be cut and cleared in accordance with standards and guidelines in the Wallowa-Whitman LRMP.

Installation of transmission line structures would require preparation of each site where a tower structure would be installed, including vegetation removal and grading to the extent needed to obtain a relatively flat surface for the operation of large cranes, which are generally used to install structures. The use of helicopters for assisted aerial construction may be required depending on overland access to the construction locations, construction schedule, and/or construction economics (Idaho Power Company 2011).

Individual structure sites would be cleared to install the transmission line support structures and facilitate access for future transmission line and structure maintenance. Clearing individual structure sites would be done using a bulldozer to blade the required area. At each 500-kV lattice-structure location, an area approximately 250 feet by 250 feet would be needed for construction laydown, structure assembly, and erection. This area would provide a safe working space for placing equipment, vehicles, and materials. The work area would be cleared of vegetation only to the extent necessary.

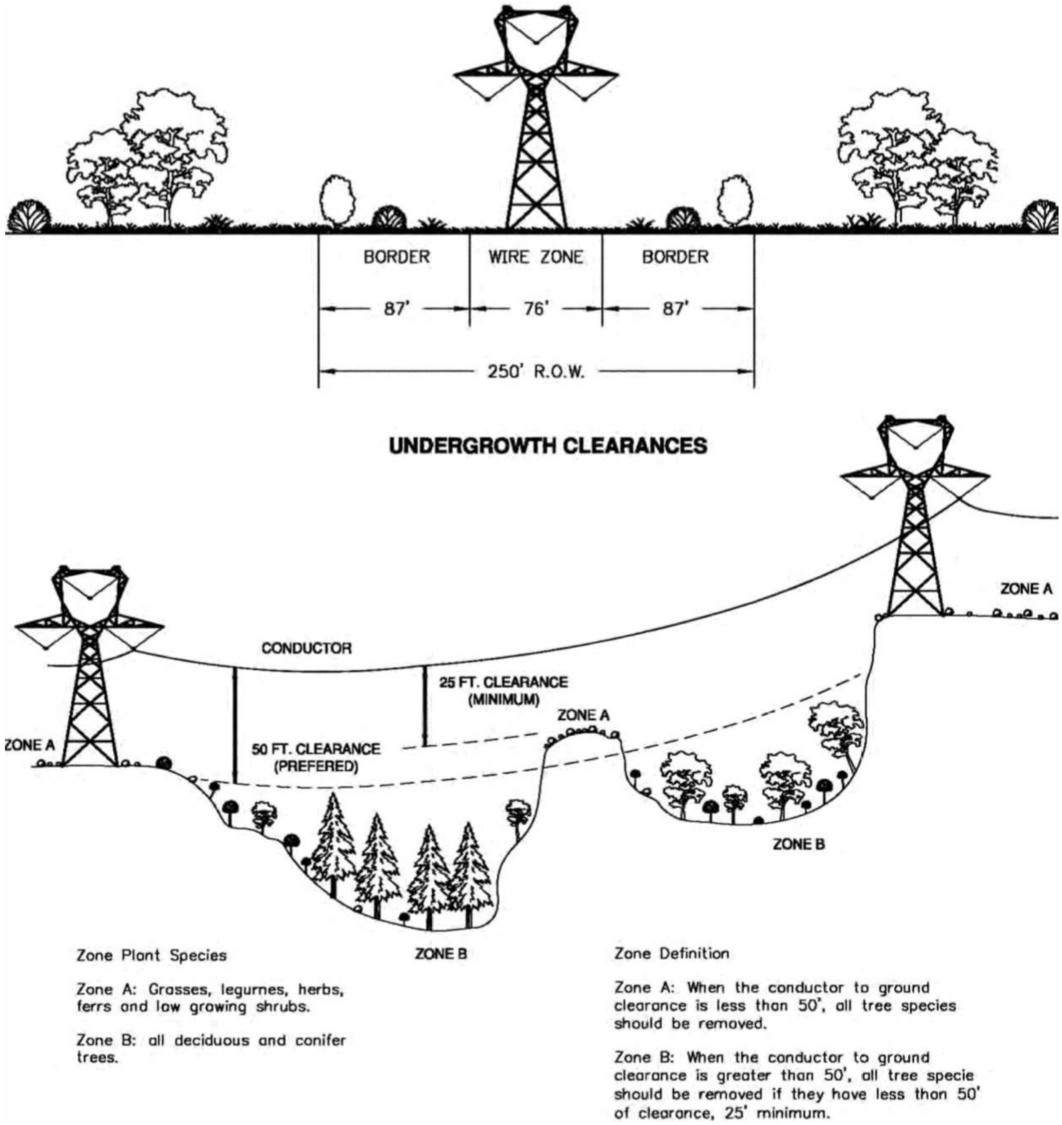


Figure Source: Revised POD (Idaho Power Company 2011)

Figure 2-16. Right-of-Way Vegetation Removal and Management

At each 230-kV H-frame structure location, an area approximately 100 feet by 150 feet (i.e., two-pole H-frame) would be needed for construction and laydown, structure assembly, and erection.

At each 138/69-kV structure location, an area approximately 100 feet by 100 feet would be needed for construction and lay down, structure assembly, and erection.

If an alternative route involving the option on the west side of Bombing Range Road is selected for construction, removal of the BPA 69-kV transmission line structures would be completed using two methods. The majority of the structures would be removed by taking down the overhead conductor and removing each of the wooden poles at 3 inches below ground surface. The poles would be lifted by crane onto trucks and removed from the site using existing access roads to the maximum extent possible. Removal of three of the H-frame structures that are located in Washington ground squirrel habitat would be removed by cutting the poles into sections, transporting the pole sections by foot to the nearest existing road, and driving the pole section off site. The construction contractor would climb the poles and remove sections starting at the top. The poles would be removed down to slightly below ground level to eliminate potential raptor-perching structures while avoiding ground disturbance. The below-grade portions of the poles would be left in place. Alternately, the wooden-pole structures could be removed by using a helicopter in conjunction with hand crews working on the ground.

After construction, areas not needed for normal transmission line maintenance, including fire and personnel safety clearance areas, would be graded to blend as nearly as practicable with the natural contours, and then revegetated as required.

Additional equipment may be required if solid rock is encountered at a structure location. Rock-hauling, hammering, or blasting may be required to remove the rock. Excess rock that is too large in size or volume to be spread at the individual structure sites will be hauled away and disposed of at approved landfills or at a location specified by the landowner. Table 2-2 provides the dimensions of each of the foundation holes required for each structure.

2.3.2.6 Transmission Line Construction

Various construction activities would occur during the construction process, with several construction crews operating simultaneously at different locations. Figure 2-17 illustrates typical transmission line construction activities.

Foundations would be installed—one foundation for each of the four legs of the lattice tower structures, two or three foundations for the tubular H-frame structures, and one foundation for single-pole structures. Medium- and large-angle H-frames and dead-ends would require three-pole structures. Table 2-2 details foundation dimensions and the amount of concrete needed for each structure type.

If shallow bedrock is encountered, blasting could be required. The construction contractor would be required to prepare a blasting plan as part of the POD (refer to Table 2-3), which details blasting procedures, locations, the amount and type of explosives, safety procedures, and notification protocols. After foundations are installed, and the concrete has had time to cure, the structures would be brought in by either truck or helicopter.

The transmission line structures would be assembled on site or in temporary staging areas (laydown yards) and then would be brought to the site to be erected. If ground transportation is used, cranes would be used to lift and install the structures.

If helicopters are used, the tower structures would be assembled at fly yards. After assembly at the fly yard, the tower sections would be airlifted to the structure location where the sections would be bolted together permanently. The fly yards would be approximately 10 to 15 acres and sited at locations within 4 to 8 minutes of fly time to structure locations.

After assembly and placement of the structures, the conductors and the overhead ground wires would be strung from tower to tower. Figure 2-18 illustrates typical conductor installation. Helicopters are used to assist in the wire installation process but may not be necessary if access roads are available along the right-of-way from tower to tower allowing specialized wire-stringing vehicles in the area. The first step to wire stringing would be to install insulators and stringing sheaves. Once in place, the initial stringing operation begins with the pulling of a lightweight “sock” line through the sheaves. A specialized stringing vehicle is used to pull the lines.

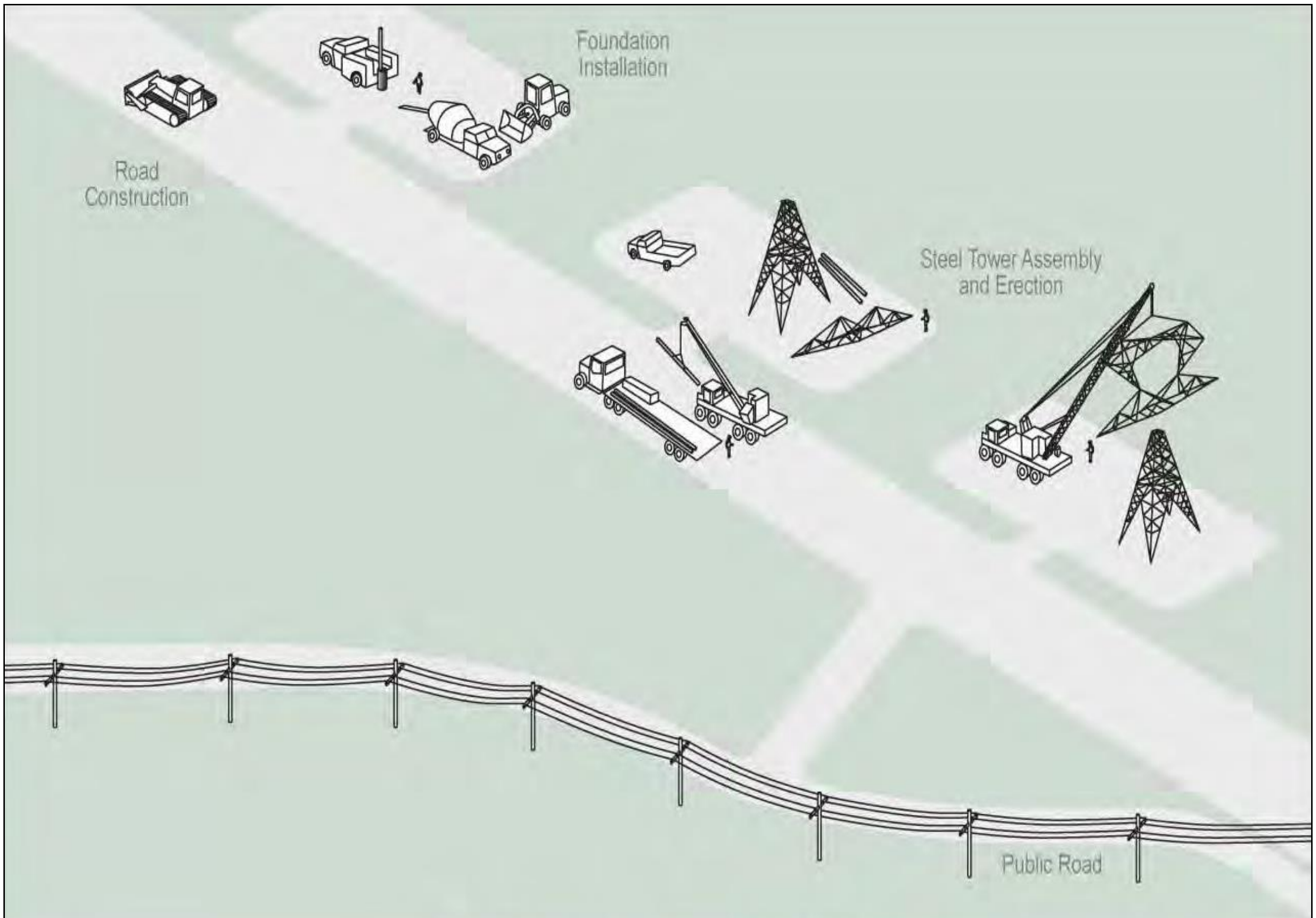


Figure Source: Revised POD (Idaho Power Company 2011)

Figure 2-17. Typical Transmission Line Construction Activities

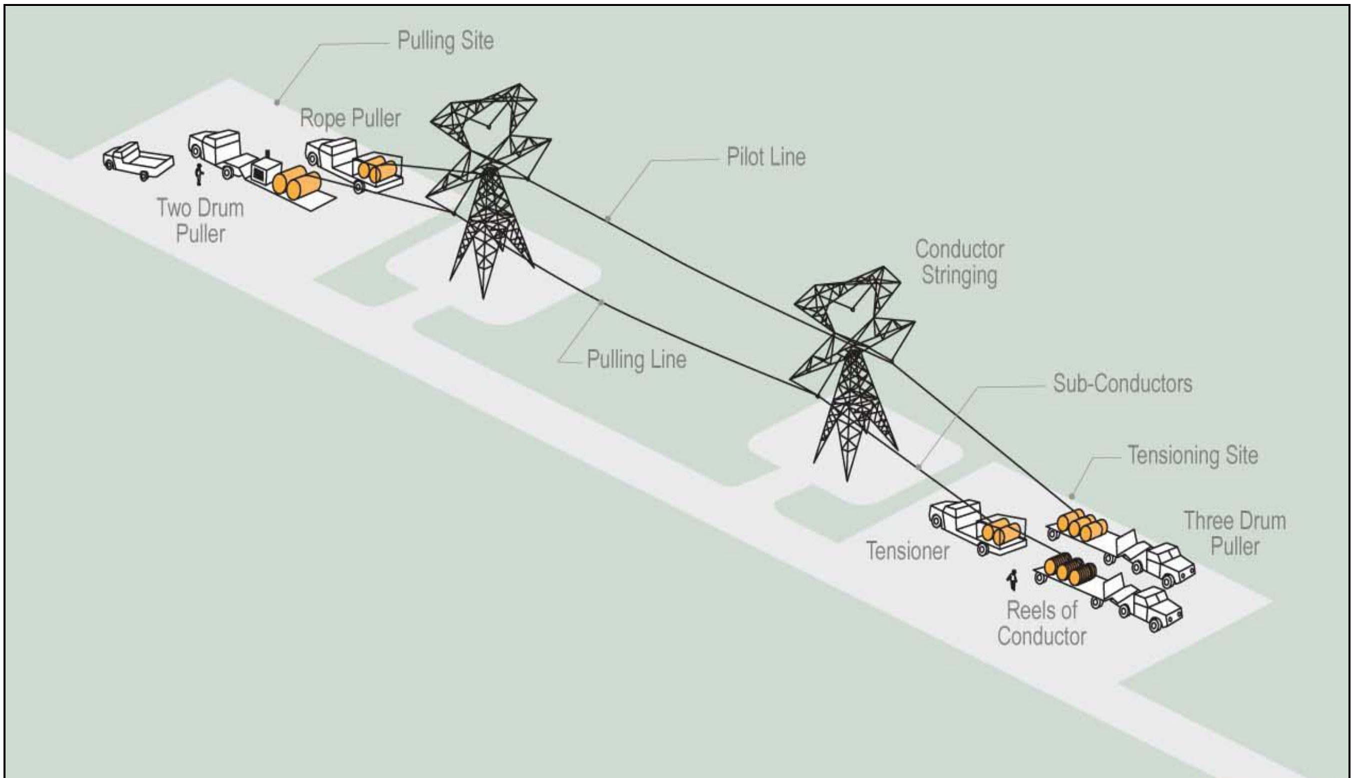


Figure Source: Revised POD (Idaho Power Company 2011)

Figure 2-18. Typical Conductor Installation

Compression or implosive devices are both used to make connections between conductors. Implosive devices are the current industry-preferred method in contrast to previously used conventional hydraulic compression fittings. Implosive fittings use explosives to compress the metal together. Implosive fittings do not require heavy equipment, but do create noise similar to a gunshot when the primer is struck. Compression fittings, dead-ends or splices, are crimped on over the conductor. Normal compression fittings need an engine, typically truck-mounted diesel, to run the hydraulic system. Implosive fittings may be set off either one at a time or in groups. Use of implosive devices would vary depending on what segment of the transmission line is under construction and the number of conductors per bundle. The duration of sound emitted from detonation of an implosive device is short, ranging from approximately 210 to 360 milliseconds. Since the potential exists for noise "startle" effects, the use of implosive devices would be limited to daytime periods. As stated previously, a B2H Project-specific blasting plan, for blasting and implosive splicing, which meets all state and federal requirements, including seasonal restrictions and buffer distances, would be developed and approved by the appropriate agency or agencies (e.g., the BLM, USFS, USFWS, NOAA Fisheries) prior to the start of field activities for inclusion in the POD, and would be executed appropriately for the B2H Project. No in-water blasting would occur as part of the B2H Project.

Following the initial pulling of the wire through the sheaves, the wire is then tensioned to the correct sag between support structures. Temporary pulling-and-tensioning sites for the 500-kV line construction would be spaced approximately 1.5 to 2 miles apart along the right-of-way and each would require approximately 5 acres for equipment and work space. Pulling-and-tensioning sites for the 230-kV and 138/69-kV lines would be spaced approximately every 1 to 2 miles along the right-of-way and would require approximately 1.2 acres for equipment and work space.

2.3.2.7 Access Roads

Access and service roads are essential for construction, operation, and maintenance of the transmission line. Large foundation-auger equipment, heavily loaded trucks, cranes, and specialized line-construction equipment would be required for construction, maintenance, and emergency restoration activities. Existing roads, existing roads that require improvements, and new roads would be needed for the B2H Project. To the extent possible, existing roads would be used in their present condition without improvements. In areas where improvements would be required or deemed to be in the best interest of the B2H Project for future operation and maintenance use, the roads would be graded and/or graveled to provide a smooth all-weather travel surface. The Applicant would coordinate with the land-managing agency or owner regarding road improvements needed.

Construction Access Roads

During construction, vehicular access would be required to each structure. New access roads would be constructed and existing roads widened as needed to provide a minimum of a 14-foot-wide travel way. Roads not required during operation would be restored to as close to their original condition as practicable or left as is, depending on landowner/land-management-agency requirements.

Access on the right-of-way, other than in specific areas, would require a travel surface with a minimum width of 14 feet. In some cases, new roads that must be graded for access along steep slopes (side-hill roads) could exceed this width depending on the amount of displaced soil. These roads typically go directly from structure to structure, except on hillsides, ridgebacks, rock-outcrop areas, wash crossings, treed areas, or in areas where sensitive environmental resources would need to be avoided. In such cases, the road would follow suitable topography from structure to structure, would be constructed in areas that generally cause the least amount of overall disturbance, and may be outside the transmission line right-of-way.

The largest of the heavy equipment needed dictates the minimum road dimensions needed. To accommodate this equipment, road specifications require a 14-foot-wide travel surface and a 16- to 35-foot-wide road width in turns. The road disturbance area and travel way in areas of rolling to hilly terrain would require wider disturbance to account for cuts and fills, turning radii, and/or where vehicles are required to pass one another while traveling in opposite directions.

Specific plans for the construction, rehabilitation, and/or maintenance of roads, including the locations of access roads would be documented in the final POD described in Section 2.3.2.1. The locations and design of B2H Project access roads (and other facilities) would be completed when a route has been selected for construction and final design and engineering completed. For purposes of analyzing effects from access roads for the EIS, ground disturbance associated with upgrading existing roads or constructing new roads was estimated through development of a predictive model that considers different types or levels of access required. This model is described in more detail in Section 2.5.1.1 under the subheading Impact Assessment and Mitigation Planning.

OPERATIONAL ACCESS ROADS

Permanent transmission line service roads developed for the B2H Project are needed for maintenance of transmission lines structures or ancillary facilities. These roads built for the B2H Project generally would be closed to the public and maintained by the Applicant for administrative use only and/or in accordance with the land-managing agency's policy and or management prescription. Gates would be maintained by the Applicant in an operable manner and secured with dual locks, where applicable, to allow the land-managing agency or owner access for emergencies. All gates installed on National Forest System lands would have reflective markings I accordance with USFS Engineering Manual EM 7100-15.

During routine operations, vehicular access would be needed to reach each structure for periodic inspections and maintenance and to areas of forest or tall shrubs to control vegetation in the right-of-way for safe operation. The Applicant plans to employ live-line maintenance techniques, which requires use of high-reach bucket trucks and other trucks and equipment. For nonroutine maintenance requiring access by larger vehicles, the full width of the access road (14 feet) may be used. Roads would be repaired, as needed, but would not be graded routinely. Best management practices would be applied to be consistent with local conditions, values, and designated uses of water. To preserve the ability to enter rapidly, the road structure (cuts and fill) would be left in place. In an emergency (e.g., in the event of a structure or conductor failure) full emergency access, including cranes and other heavy equipment, would be needed. Based on historical reliability of the lattice and H-frame structures, it is anticipated that only a small fraction of the structure sites would require emergency access during the life of the B2H Project.

2.3.2.8 COMMUNICATIONS SYSTEM

Fiber-optic cable for the communications system would be installed concurrently with stringing the conductors. Construction of communications sites would begin with grading the selected area, removing vegetation, and installing a layer of crushed rock. A prefabricated concrete communications shelter approximately 12 feet by 32 feet by 9 feet tall would be constructed on the site. A standby generator with a liquid petroleum gas fuel tank would be installed at the site inside the fenced area. Two cable routes (aerial and/or buried) from the transmission line structure to the equipment shelter would be installed (Idaho Power Company 2011). Typical layout of a communication site is illustrated in Figure 2-13.

Access roads to communications stations would be constructed using a bulldozer or grader, followed by a roller to compact and smooth the ground. Front-end loaders would be used to move the soil locally or off site. Typically, gravel would be applied to the prepared base layer (Idaho Power Company 2011).

2.3.2.9 Construction Workforce and Equipment

The B2H Project would be constructed primarily by contract personnel; the Applicant would be responsible for administration and inspection. The construction workforce would consist of laborers, craftspeople, supervisory personnel, support personnel, and construction management personnel who would perform the construction tasks. The B2H Project is proposed to be constructed in two geographic segments, within which a complete construction sequence would be conducted. The boundaries of the construction segments have not been finalized, but the northern construction segment would likely include Morrow, Umatilla, and Union counties and the northern portion of Baker County, and the southern construction segment would likely include the southern portion of Baker County, Malheur County, and Owyhee County. Both construction segments are planned to occur simultaneously and are anticipated to take approximately 3 years to complete. The projected number of construction workers and anticipated changes to the population of the B2H Project area are summarized by construction segments in Table 2-5.

Table 2-5. Projected Number of Workers and Population Change During Peak Construction

Workers	Construction Segment 1	Construction Segment 2
Permanent workers likely to commute to job site daily	61	63
Temporary workers likely to move to B2H Project area alone	164	169
Temporary workers likely to move to B2H Project area with family	18	19
Total	243	251

Table Source: Revised POD (Idaho Power Company 2011).

2.3.3 Operation and Maintenance

2.3.3.1 Land Requirements for Operations

During operations, land requirements would be restricted to the right-of-way, substations, communications facilities, and roads authorized by the right-of-way grant and special-use authorization. Approval for access across federal lands to the right-of-way would be contained in the right-of-way grant and special-use authorization. Access to the easement across nonfederal land would be in accordance with the land rights obtained by the Applicant as part of the easement acquisition process. As the engineering details of the B2H Project design are developed, the locations and areas of land needed for B2H Project operations may be revised, and would be specified in the final POD. Table 2-1 provides the approximate land areas that would be needed for construction and operations of the B2H Project throughout the life of the B2H Project.

2.3.3.2 Routine System Inspection, Maintenance, and Repair

The Applicant proposes specific operations and maintenance policies and procedures that are designed to meet the requirements of NERC, Western Electricity Coordinating Council, the state public utility commissions of Oregon and Idaho, and to comply with applicable codes and standards for maintaining the reliability of the electrical system. Operation and maintenance activities would include transmission line patrols, climbing inspections, structure and wire maintenance, insulator washing as needed, vegetation management, and access roads repair. Periodic inspection and maintenance is a key part of operating and maintaining the electrical system.

After the transmission line has been energized, land uses that are compatible with safety regulations would be permitted in and adjacent to the right-of-way. Existing land uses such as agriculture and grazing generally would be permitted within the right-of-way. Incompatible land uses within the right-of-way include construction of inhabited dwellings and any use requiring changes in surface elevation that could affect electrical clearances of existing or planned facilities.

Transmission Line Maintenance

Planned maintenance activities include routine patrols, inspections, scheduled maintenance, and scheduled emergency maintenance. Regular ground and aerial inspections would be performed in accordance with the Applicant's established policies and procedures for transmission line inspection and maintenance. Transmission lines and substations would be inspected for corrosion, equipment misalignment, loose fittings, vandalism, and other mechanical problems. Inspection of the entire transmission line system would be conducted semi-annually with detailed ground inspections using trucks or all-terrain vehicles taking place on an annual basis using service roads to each structure. Examples of routine maintenance include the following:

- Inspections from a helicopter
- Inspections from ground patrols
- Climbing structures to inspect hardware or make repairs
- Structure or conductor maintenance from a bucket truck
- Cathodic protection surveys
- Vegetation clearing to trim or remove shrubs and trees over 12 feet
- Removal of individual trees (hazard trees) that pose a risk to conductors or structures
- Routine road maintenance such as grading to improve surface condition and drainage, or removing rocks and debris
- Installation of bird protection devices, bird perch discouragers, and relocation or removal of bird nests as permitted.

Unplanned maintenance activities include emergency maintenance in cases where public safety and property are threatened. Unplanned maintenance activities and emergency maintenance and repair that could arise from the following:

- Lightning strike or wildfire
- Damage to structures from high winds, ice, or other weather-related conditions
- Line or system outages
- Breaking or eminent failure of crossarms or insulators
- Vandalism to structures or conductors

Routine maintenance activities are ordinary maintenance tasks that historically have been performed and are carried out on a routine basis. The work performed is typically repair or replacement of individual transmission line components and does not result in new ground disturbance. These maintenance activities typically are performed by relatively small crews using a minimum of equipment and usually are conducted within a period from a few hours up to a few days. Work requires access to the damaged portion of the line. Equipment required for this work may include four-wheel-drive trucks, flatbed trucks, bucket trucks (low reach), boom trucks (high reach), or manlifts. This work is scheduled and is typically in response to issues found during inspections. Typical items that may require periodic replacement on transmission line structures include insulators, hardware, or other structure members. It is expected that these replacements would be required infrequently.

Access Road and Work Area Repair

Repairs in the right-of-way may include grading or repair of existing maintenance access roads and work areas, and spot repair of sites subject to flooding or scouring. Required equipment may include a grader, backhoe, four-wheel-drive pickup truck, and a cat-loader or bulldozer. The cat-loader has steel tracks, whereas the grader, backhoe, and truck typically have rubber tires. Repairs in the right-of-way would be scheduled as a result of line inspections in response to an emergency situation.

Vegetation Management

The need for vegetation management also would be determined during inspection patrols.

Work areas adjacent to electrical transmission structures and along the right-of-way would be maintained for vehicle and equipment access. Shrubs and other obstructions would be removed near structures to facilitate inspection and maintenance of equipment and to ensure system reliability. At a minimum, trees and brush would be cleared within a 25-foot radius of the base or foundation of all electrical transmission structures and to accommodate equipment pads to conduct live-line maintenance operations.

Vegetation management practices along the right-of-way would be in accordance with the Applicant's clearing specifications and vegetation management plans, which would be consistent with the NERC's Vegetation Management Standards (FAC-003-2, 2009). The area that would be rights-of-way for the B2H Project are dominated by agricultural and shrub-steppe vegetation communities except for the approximately 5.9 miles in the designated utility corridor across the Wallowa-Whitman National Forest. Interference with conductors is not anticipated. However, if vegetation management is required, the Applicant generally would schedule it according to maintenance cycles (e.g., 5- or 10-year cycles).

A wire-border zone method is used to control vegetation. This method results in two zones of clearing and revegetation. The wire zone is the linear area along the right-of-way under the wires and extending 10 feet outside of the outermost phase conductor. After initial clearing, vegetation in the wire zone would be maintained to consist of native grasses, legumes, herbs, ferns, and other low-growing shrubs that remain under 5 feet tall at maturity. The border zone is the linear area along each side of the right-of-way extending from the wire zone to the edge of the right-of-way. Vegetation in the border zone would be maintained to consist of tall shrubs or short trees (up to 25 feet high at maturity), grasses, and forbs. These cover plants benefit the right-of-way by competing with and excluding undesirable plants. The width of the wire and border zones for the various transmission lines are depicted in Figure 2-16. During maintenance inspections, vegetation growth would be monitored and managed to maintain the wire-border zone objectives. The Applicant's approach is to remove all tree species within the right-of-way where the conductor ground clearance is less than 50 feet, leaving grasses, legumes, herbs, ferns, and low-growing shrubs within the right-of-way. When conductor ground clearance is greater than 50 feet; for example, a canyon or ravine crossing with high ground clearance at mid-span, trees and shrubs would be left in place as long as the conductor clearance to the vegetation tops is 50 feet or more (Figure 2-16).

Vegetation would be removed using mechanical equipment such as chain saws, weed trimmers, rakes, shovels, mowers, and brush hooks. Clearing efforts in heavy growth areas would use equipment such as a Hydro-Ax or similar. The duration of activities, the size of crew and required equipment depends on the amount and size of the vegetation to be trimmed or removed.

In selected areas, herbicides may be used to control noxious weeds. Herbicide applications would be performed in accordance with federal, state, and local regulations, and in compliance with managing land agency requirements.

Noxious Weed Control

The states of Idaho and Oregon list activities that are capable of disseminating noxious weeds and the requirements to control the spread of listed noxious weeds. Equipment and supplies necessary for transmission line construction and operation and maintenance activities, and the activities themselves, are possible agents for the spread of noxious weeds. Under the requirements of a right-of-way grant or special-use authorization, and privately negotiated easements, the Applicant would be responsible for control of noxious weed species that result or would result from construction, operation, and maintenance of the improvements authorized under the grant. Therefore, a noxious-weed-control strategy to reduce the opportunity for weeds to invade new areas and to minimize the spread of weeds within a predetermined area associated with the B2H Project is addressed in Appendix B2 of the POD, Framework Reclamation Plan, which complies with Oregon, Idaho, BLM, and USFS noxious weed requirements. However, cleaning stations may be needed closer to the potentially affected area. Noxious weed control is discussed in Section 3.2.3.

The responsible party would clean all equipment that may operate off-road or disturb the ground before beginning construction or operation and maintenance activities within a predetermined area associated with the B2H Project. This process would clean tracks and other parts of the equipment that could trap soil and debris and would reduce the potential for introduction or spread of undesirable exotic vegetation. Preferably, the cleaning would occur at an Idaho Power operation center, commercial car wash, or similar facility. Vehicles traveling only on established paved roads would not require cleaning.

Communication Site Maintenance

Maintenance activities for communication sites include equipment testing, equipment monitoring and repair, and emergency and routine procedures for service continuity and preventive maintenance. Communication sites would be visited every 2 to 3 months by one individual in a light-duty truck to inspect the facilities. Annual maintenance would be performed by a two-man crew in a light-duty truck over a 2- to 5-day period.

Fuel and Chemical Storage Facilities

During construction, gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be present along the transmission line corridor, typically at multi-use areas, and at the Longhorn Substation construction site. These products would be used to fuel, lubricate, and clean vehicles and equipment and would be transported in containerized trucks or in other federal and state approved containers. Enclosed containment would be provided for petroleum products and wastes and petroleum-related construction waste would be removed to a disposal facility authorized to accept such materials. Fuel and chemicals would be stored properly to prevent drainage or accidents. Where required, preventive measures such as the use of vehicle drip pans for overnight parking areas may be implemented. Routine visual inspection for presence of petroleum leaks would be required for vehicles. Diesel fuel tanks would be located at the multi-use areas for vehicle and equipment fueling. Each fuel tank would be located within secondary containment and each station would be equipped with a spill kit. When on-right-of-way refueling is necessary, it would be done away from waterways. Accidental releases of hazardous materials would be prevented or minimized through proper containment of these substances during use and transportation to the site. A SPCC Plan will be prepared as part of the POD (refer to Table 2-3). All hazardous and dangerous materials would be stored and secured in accordance with the appropriate regulations.

During operations, no fuels or potentially hazardous materials such as general lubricants, general cleaners, ethylene glycol (antifreeze), vehicle fuel, or herbicides for weed control would be stored on the right-of-way. When used, they would be stored and disposed of in accordance with applicable local, state, federal environmental laws and regulations, and product labels where applicable. At the communication stations, liquid petroleum would be stored in approved tanks. Reactors at the termination station would be filled with an insulating mineral oil. Secondary containment structures would be installed to prevent oil from this equipment from reaching ground or water bodies in the event of a rupture or leak. IPC would use a standard type of oil containment consisting of a pit of a calculated capacity under the oil-filled equipment that has an oil-impervious liner. The pit is filled with rock to grade level. In case of an oil leak or rupture, the oil captured in the containment pit is removed and transported to an approved disposal facility.

Equipment and Systems for Fire

During construction, the risk of fire danger is related to smoking, refueling activities, operating vehicles and other equipment off improved roadways, welding activities, and the use of explosive materials and flammable liquids. Spark arrestors would be used on vehicles and equipment as appropriate. During operation, the risk of fire is primarily from vehicles and maintenance activities that require welding. A Fire Prevention and Suppression Plan will be included in the final POD (refer to Table 2-3) and personnel would receive instructions/training regarding participation in fire suppression operations with local and federal firefighting operations.

All federal, state, and county laws, ordinances, rules, and regulations pertaining to fire prevention and suppression would be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations.

The prevention and suppression of wildfires in eastern Oregon is carried out by BLM, USFS, and local fire districts and agencies and by BLM, state of Idaho, and local fire districts in Idaho (Table 2-6).

Table 2-6. Fire Suppression Responsibilities in Oregon

Who	Where
Oregon	
City fire departments and rural fire protection districts in mutual aid with Oregon Department of Forestry	Structures in Oregon's wildland interface areas covered by mutual-aid agreements. Rangeland fire protection associations on rangeland areas of eastern Oregon outside of both a forest protection district and a rural fire district.
Bureau of Land Management and Bureau of Reclamation	National System of Public Lands and Bureau of Reclamation managed lands
U.S. Forest Service	National Forest and National Grasslands
Idaho	
City fire departments and Rangeland Fire Protection Associations protection districts in mutual aid with Idaho Department of Lands	Structures in Idaho wildland interface areas covered local fire protection. Rangelands on private lands are protected by Rangeland Fire Protection Association, specifically the Owyhee Rangeland Fire Protection Association.
Bureau of Land Management	National System of Public Lands and Bureau of Reclamation-managed lands
Idaho Department of Lands	State lands

Table Source: ODEQ 2003; Idaho Power Company 2016

Table Note: In Oregon, the agencies' activities are closely coordinated, primarily through the Pacific Northwest Wildfire Coordinating Group. Coordination of firefighting resources also occurs under Oregon's *Emergency Conflagration Act* that allows the state fire marshal to mobilize and dispatch structural firefighting personnel and equipment when a significant number of structures are threatened by fire and local structural fire-suppression capability is exhausted (OSFM 2007).

If the Applicant becomes aware of an emergency situation that is caused by a fire on or threatening BLM-managed or National Forest lands and that could damage the transmission lines or their operation, they would notify the appropriate agency contact. Specific construction-related activities and safety measures would be implemented during construction of the transmission line to prevent fires and to ensure quick response and suppression if a fire occurs. Typical practices to prevent fires during construction and maintenance/repair activities include brush clearing prior to work, posting a fire watch, and stationing a water truck at the job site to keep the ground and vegetation moist in extreme fire conditions, enforcing red flag warnings, providing "fire behavior" training to all construction personnel, keeping vehicles on or within designated roads or work areas, and providing fire suppression equipment and emergency notification numbers at each construction site.

The Applicant would require its contractor to maintain a list, to be provided to local fire-protection agencies, of all equipment that is either specifically designed for, or capable of, being adapted to fighting fires. The Applicant would require its contractor to provide basic fire-fighting equipment on-site during construction, including fire extinguishers, shovels, axes, and other tools in sufficient numbers so each employee on-site can assist in the event of a fire-fighting operation.

During transmission line operation, the risk of fire danger is minimal. The primary causes of fire on the right-of-way result from unauthorized entry by individuals for recreational purposes and from fires started outside the right-of-way. In the latter case, authorities can use the right-of-way as a potential point of attack for fighting a fire. During transmission line operation, access to the right-of-way would be restricted in accordance with jurisdictional agency or landowner requirements to minimize recreational use of the right-of-way.

During maintenance operations, the Applicant or its contractor would equip personnel with basic fire-fighting equipment, including fire extinguishers, shovels, and polaskis as described above. Maintenance crews also would carry emergency response/fire control phone numbers.

2.3.4 Environmental Design Features of the Project

Early in the project, land-use plans and other documents relevant to the B2H Project were reviewed to identify best management practices and other measures that mitigate potential impacts and were compiled from the multiple sources into a comprehensive list. Sources include BLM resource management plans, the USFS land and resource management plan, agency policy manuals, the interagency operating procedures from the West-wide Energy Corridor EIS (DOE and BLM 2008), and RODs (BLM 2009; USFS 2009), and environmental protection measures proposed by the Applicant. Among the information, there was much redundancy and the list was condensed to be more concise (Draft EIS Appendix C). Comments on the Draft EIS included a criticism that reviewers had difficulty discerning where impacts would occur, how and where impacts would be mitigated, and the relative effectiveness of the measures. In response to those comments, the BLM further refined the measures into two types. One type comprises measures the Applicant would implement as standard practice of construction, operation, and/or maintenance, as applicable. Referred to as design features of the project for environmental protection, these environmental design features are part of the Applicant's project description. Table 2-7 is a list of the environmental design features; and for each feature, the table indicates the phase of the B2H Project the design feature would apply to and the intended effectiveness of the design feature. These environmental design features are applied to all lands, regardless of jurisdiction or ownership, where appropriate. The other type comprises measures that the Applicant has committed to apply to certain areas through the planning process to avoid, reduce, or minimize impacts of the B2H Project. The selective mitigation measures are described in Section 2.5.1.1.

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
1. Plan of Development A Plan of Development (POD) would be prepared for implementation and maintenance of the B2H Project to provide direction to the Applicant's construction personnel, construction contractors and crews, compliance inspection contractor (CIC), environmental monitors, and agency personnel regarding specification of construction; and provide direction to the agencies and Applicant's personnel for operation and maintenance of the B2H Project. The POD would contain implementation plans and detailed mapping to facilitate execution of environmental protection, mitigation measures, and conservation measures. Implementation plans (also refer to EIS Table 2-3) would include the following: • Flagging, Fencing, and Signage Plan • Traffic and Transportation Management Plan • Environmental and Safety Training Plan • Environmental Compliance Management Plan • Biological Resources Conservation Plan • Biological Survey Work Plan • Noxious Weed Management Plan • Water Resources Protection Plan • Historic Properties Management Plan • Paleontological Resources Treatment Plan • Erosion, Dust Control, and Air Quality Plan • Reclamation, Revegetation, and Monitoring Framework Plan • Stormwater Pollution Prevention Plan • Spill Pollution Prevention Containment and Countermeasure Plan • Hazardous Materials Management Plan • Emergency Preparedness and Response Plan • Fire Prevention and Suppression Plan • Blasting Plan	✓	✓	✓	The implementation plans, prepared based on requirements from land-management and/or regulatory agencies, would outline the direction for adhering to the requirements during construction, operation, and maintenance of the B2H Project. The plans would contribute to avoiding, minimizing, rectifying, reducing, eliminating, or compensating for effects of the B2H Project on the environment. The plans would be incorporated into the POD, which would be approved by the agencies prior to commencing construction. Execution of the POD would be a condition of the Record(s) of Decision (ROD) and stipulation for the right-of-way grant and other authorizations.

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
2. Environmental Training for All Personnel Prior to construction, the compliance inspection contractor (CIC) would instruct all personnel on the protection of cultural, paleontological, ecological, and other natural resources such as (a) federal and state laws regarding antiquities, paleontological resources, and plants and wildlife, including collection and removal; (b) the importance of these resources; (c) the purpose and necessity of protecting them; and (d) reporting and procedures for stop work.		✓	✓	This procedure is mandatory to educate all construction and maintenance personnel on the requirements for environmental protection during construction and for maintenance activities set forth in the POD, with the intent of avoiding, minimizing, reducing, or eliminating effects on the environment.
3. Landowner Notification(s) Prior to B2H Project-related activities on private lands, landowners would be contacted for rights-of-entry and to inform them of impending visits to and/or work on their respective properties. A toll-free telephone number would be maintained for landowners to contact the Applicant or the Applicant's designee with questions, concerns, and/or to report any B2H Project-related issues during construction of the B2H Project.	✓	✓		This procedure is intended to keep the private landowners informed of B2H Project-related actions and activities on their lands and would allow for concerns of landowners during construction to be addressed.
4. Preconstruction Surveys for Sensitive Species Preconstruction surveys for special status species, threatened and endangered species, or other species of particular concern would be considered in accordance with the B2H Project Biological Survey Work Plan, which was approved previously by the Applicant and the appropriate land-management or wildlife-management agencies (e.g., Bureau of Land Management [BLM], U.S. Fish and Wildlife Service [USFWS], state wildlife agencies, etc.). In cases for which such species are identified, appropriate action would be taken to avoid jeopardizing the species and its habitat. Amendments to the work plan would be made based on the best available science. Surveys for fish species are not anticipated; Endangered Species Act (ESA)-listed fish species would be presumed present in all watersheds that agency data indicate presence.	✓	✓		While the surveys or the results of the surveys are not measures that avoid, reduce, minimize, or eliminate over time effects on the special status species, the results of the surveys would be used to generate professional recommendations for mitigation and/or conservation measures to protect the species. The resulting mitigation and/or conservation measures would be incorporated into the POD.
5. Spatial Extent of Construction Activities The spatial limits of construction activities, including vehicle movement, would be predetermined with activity restricted to and confined within those limits. No paint or		✓		Restricting all construction activities and vehicle movement to the areas granted for right-of-way, easement, special-use authorization would avoid

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
permanent discoloring agents indicating survey or construction limits would be applied to rocks, vegetation, structures, fences, etc.				disturbance outside the area granted. Also, this design features precludes use of permanent discoloring agents inside or outside the area granted for the B2H Project.
6. Reclaim Construction Areas In construction areas (e.g., staging areas, material laydown yards, fly yards, and wire pulling/splicing sites), where there is ground disturbance and where recontouring is required, surface reclamation would occur as required by the Reclamation, Revegetation, and Monitoring Plan or the landowner. The method of reclamation may consist of, but not be limited to, returning disturbed areas to their natural contour, replacement of displaced rocks and boulders in a manner that does not create strong edge conditions, reseeding, installing cross drains for erosion control, placing water bars in permanent roads, use of vertical pitting and mulching used for clearings in sage areas, and filling ditches where they were installed for temporary roads. All areas disturbed as a part of the construction and/or maintenance of the proposed transmission line would be seeded with a seed mixture appropriate for those areas as identified in the Reclamation, Revegetation, and Monitoring Plan. The federal land-management agency or landowner(s) would approve a seed mixture that is compatible with the affected Ecological Site Description. Seeding methods typically would include drill seeding, where practicable; however, the federal land-management agency or landowner(s) may recommend broadcast seeding as an alternative method in some cases. In construction areas where disturbing the existing contours is not required, vegetation would be left in place wherever possible, and original contours would be maintained to avoid excessive root damage and allow for resprouting in accordance with the Reclamation, Revegetation, and Monitoring Plan or landowner approval.		✓	✓	Reclaiming areas disturbed following construction by rectifying the effects of construction by repairing, rehabilitating, or restoring the affected environment to a visually similar character by replicating colors, patterns and textures to those found prior to the project induced disturbances. Placement of rocks and boulders to avoid creating additional strong linear edges helps to restore similar visually character of the disturbed areas.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
7. Salvage Topsoil for Revegetation In work areas where ground-disturbing activities would occur, topsoil would be salvaged and segregated prior to construction, to be redistributed and contoured evenly over the surface of the disturbed area to be removed following completion of construction. The soil surface would be seeded with an agency- or landowner-approved seed mix and left rough to help reduce the potential for erosion and loss of seeded surface as specified in the reclamation plan.		✓	✓	The intent of this procedure is to facilitate reclamation, revegetation and restoration by using the stockpiled native topsoil, and leave the surface in a condition to reduce potential for erosion and better assist revegetation establishment to reduce or eliminate the effects over time.
8. Overland Travel in Construction Work Areas Grading would be minimized by driving overland in areas approved in advance by the land-management agency and/or land owner in predesignated work areas (e.g., staging areas, material laydown yards, fly yards, and wire pulling/splicing sites) whenever possible.	✓	✓	✓	This practice would reduce and/or minimize potential for additional erosion and introduction of noxious weeds; and increase revegetation success by leaving existing vegetation roots intact by reducing the amount of grading during construction.
9. Use of Access Routes Outside of Right-of-way All vehicle movement outside the right-of-way would be restricted to predesignated access, contractor-acquired access, public roads, overland travel routes, or crossings of streams approved in advance by the applicable land-management agency or landowner.		✓	✓	Similar to Design Feature 4, restricting vehicle movement would preclude disturbance outside areas essential for B2H Project-related travel to avoid B2H Project effects outside of the right-of-way.
10. Speed Limit on Project Access Routes To minimize vehicle collisions with wildlife or livestock and reduce amount of dust generated from construction related activities, a speed limit of 25 miles per hour would be employed on B2H Project access routes, unless the applicable land-management agency has designated an alternative speed limit.		✓	✓	Slower vehicular-travel speeds allow for increased time for driver response, thereby minimizing the potential for such collisions. Also, vehicles traveling at slower speeds generate less dust, reducing B2H Project effects.
11. Limit Construction and Maintenance Activities During Migratory Bird Nesting Season If ground-disturbing activities (e.g., vegetation clearing or construction activities) could not be avoided during the migratory bird nesting season (between April 1 and July 15), migratory bird and nest surveys would be required within 7 days of any ground-disturbing activities. A spatial buffer would be placed around each active nest detected during the surveys in the area where the buffer intersects work areas where		✓	✓	Limiting construction and maintenance activities during migratory bird nesting season would minimize and avoid disturbance and/or the take of migratory birds and their nests during construction and maintenance activities by conducting these operations outside the migratory bird nesting season and away from active nests.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
vegetation clearing or construction is taking place, until such time as the nest is determined, through monitoring, to be no longer occupied. Appropriate spatial nest buffers (by species or guild) and nest-monitoring requirements would be identified using the best available scientific information through coordination with USFWS and other appropriate agencies, and would be provided in a migratory-bird nest-management plan incorporated into the POD.				
12. Avian-Safe Design The Applicant would design and construct all new or rebuilt transmission facilities to avian-safe design standards, including the Applicant's Avian Protection Plan (Idaho Power 2015), Reducing Avian Collisions with Power Lines (APLIC 2012) and Suggested Practices for Avian Protection on Power Lines (APLIC 2006).	✓	✓		This would reduce and/or eliminate the potential for raptor or other large-bird electrocutions and minimize the potential for raptor and other bird collisions with the transmission line through the implementation of these standards.
13. Raptor Protection During Breeding Agency guidelines for raptor protection during the breeding season would be followed.	✓	✓	✓	Following these guidelines would avoid take of raptors and minimize disturbance by implementing seasonal and spatial restrictions around active raptor nests during construction and maintenance activities.
14. Shallow Groundwater Discovery During Drilling State standards for abandoning drill holes would be adhered to where groundwater is encountered.		✓		Complying with state standards for abandoning drill holes where groundwater is encountered would address the potential for contamination of groundwater in the event they are encountered during geotechnical investigation and/or construction.
15. Reduce Impacts on Riparian Areas Consistent with the BLM and USFS riparian management policies, surface-disturbing activities would be avoided in defined segments of Riparian Conservation Areas[2], using the following delineation criteria, unless exception criteria defined by the BLM are met or with agency approval of acceptable measures to protect riparian resources and habitats by avoiding or minimizing stormwater runoff, sedimentation, and disturbance of riparian vegetation, habitats, and wildlife species: • Fish-bearing streams: 300 feet slope distance on either side of the stream, or to the extent of additional delineation criteria, whichever is greatest.	✓	✓	✓	This would reduce potential for direct and indirect impacts on riparian areas and the vegetation, fish, and wildlife habitats associated with them by avoiding, minimizing, reducing, and/or eliminating over time modification of these areas through development of site-specific mitigations.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
• Perennial non-fish bearing streams: 150 feet slope distance on either side of the stream, or to the extent of additional delineation criteria, whichever is greatest. • Ponds, lakes, reservoirs, and wetlands greater than 1 acre: 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs, or from the edge of the wetland, pond or lake, or to the extent of additional delineation criteria, whichever is greatest. • Intermittent or seasonally flowing streams and wetlands less than 1 acre in watersheds that support ESA-listed fish species and /or designated critical habitat: 100 feet slope distance from the edge of the stream channel or wetland to the outer edge of riparian vegetation, whichever is greatest. • Intermittent or seasonally flowing streams and wetlands less than 1 acre in watersheds that do not have current, documented presence of ESA-listed fish species and /or designated critical habitat: 50 feet slope distance from the edge of the stream channel or wetland to the outer edge of riparian vegetation, whichever is greatest. Mitigation measures, such as micro-siting road locations, would be developed on a site-specific basis, in consultation and coordination with the BLM and other federal land-management agencies, and incorporated into the final POD.				
16. Span Riparian Communities/Water Courses Based on biological resources surveys and results of Section 7 consultation (with USFWS and National Oceanic and Atmospheric Administration [NOAA] Fisheries), state and federally designated sensitive plants, fisheries, habitat, wetlands, riparian areas, springs, wells, water courses, or rare/slow regenerating vegetation communities would be flagged and structures would be placed to allow spanning of these features, where feasible, within the limits of standard structure design. Surveys for fish species are not anticipated; ESA-listed fish species would be presumed present in all watersheds that agency data indicate presence.	✓			Spanning riparian communities and/or water courses would avoid, minimize and/or reduce potential for impacts on riparian areas and water courses by siting project facilities outside of these areas.

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1] Design and Engineering	Construction	Operation and Maintenance	Effectiveness
17. Work During Wet Periods If work were required during wet periods with saturated soil conditions, vehicles would not be allowed to travel when soils are moist enough for deep rutting (4 or more inches deep) to occur unless prefabricated equipment pads (matting) were installed over the saturated areas or other measures were implemented to prevent rutting. Equipment with low-ground-pressure tires, wide tracks, or balloon tires would be used when possible.		✓	✓	This would avoid, minimize, and/or reduce potential for impacts on riparian and soil resources by avoiding work in these areas during wet periods and/or by taking measures that would reduce and minimize disturbance of these areas if work in them could not be avoided during wet periods.
18. Crossing of Dry Washes Crossings of dry washes would be made during dry conditions, when possible. Repeated crossings would be limited to the extent possible but constrained to the same location with appropriate stabilization to reduce erosion potential.		✓	✓	This would avoid and minimize potential for impacts on water quality and stream structure and function by limiting crossing periods and the frequency of the crossings.
19. Canal and/or Ditch Crossings Canal and/or ditch crossings would require placement of temporary bridges or improvement of existing crossings.	✓	✓		This is intended to avoid or minimize damage to water-delivery infrastructure and/or interference with delivery of water.
20. Reduce Potential for Aquatic Invasive Species Interagency-developed methods of avoidance, inspection, and sanitization as described in the Operational Guidelines for Aquatic Invasive Species Prevention and Equipment Cleaning (USFS 2009) would be adhered to. If control of fugitive dust near sensitive water bodies is necessary, water would be obtained from treated municipal sources or drafted from sources known to contain no aquatic invasive species. Support vehicles, drill rigs, water trucks and drafting equipment would be inspected and sanitized, as necessary, following interagency-approved operational guidelines.		✓	✓	This would avoid, reduce, and/or minimize the potential for spread of aquatic invasive species through adherence with methods to prevent the transport of these invasive species during construction activities associated with the B2H Project.
21. Disposal of Hazardous Materials and Construction Waste Hazardous material would not be discharged onto the ground or into streams or drainage areas. Enclosed containment would be provided for all waste. All construction waste (i.e., trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials) would be removed to a disposal facility authorized to accept such materials within 1 month of B2H Project completion, except for hazardous waste which would be removed within 1 week of B2H Project		✓	✓	Proper disposal of hazardous materials and construction waste is intended to avoid introduction of such waste into the environment. As explained in Design Feature 1, a Spill Pollution Prevention and Countermeasure Plan would be completed and be a part of the POD.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
completion. Refueling and storing potentially hazardous materials would not occur within a 200-foot radius of all identified private water wells, and a 400-foot radius of all identified municipal or community water wells. Spill prevention and containment measures would be incorporated as needed.				
22. Right-of-way Debris All nonbiodegradable debris from the construction or maintenance of the transmission line would be collected and removed from the right-of-way when the construction or maintenance is complete. Slash would be left in place or disposed of in accordance with requirements of the land-management agency or landowner.		✓	✓	Proper disposal of right-of-way debris is intended to avoid introduction of debris into the environment and minimize the effects of construction. However, slash may be left in place if the land-management agency or landowner identify a benefit (e.g., erosion control, habitat).
23. Open Burning of Trash Open burning of construction trash would not be allowed unless permitted by the appropriate authorities.		✓	✓	Disallowing open burning of trash avoids that as the potential for ignition of inadvertent, accidental wildfire.
24. Spark Arrestor on Combustion Engines All internal- and external-combustion engines would be operated per 36 Code of Federal Regulations 261.52, which requires all such engines to be equipped with a qualified spark arrester that is maintained and not modified.		✓	✓	Requiring spark arrestors on all internal- and external-combustion engines would minimize the potential for such sparks as cause ignition of inadvertent, accidental wildfire.
25. Avoid Work in Hazardous/Contaminated Sites Where work would occur on hazardous and contaminated sites, the Applicant must seek approval from the U.S. Environmental Protection Agency (EPA) as required by federal law. Work on contaminated sites must avoid remedial structures (e.g., capped areas, treatment, or monitoring wells, etc.) and workers must use adequate worker protection measures for working in contaminated areas.		✓	✓	Avoiding work in sites recognized by the EPA as hazardous and/or contaminated precludes issues of construction worker health and safety and reduces potential damage to remedial structures.
26. Reduce Corona Corona is the localized electric field near a conductor that can be sufficiently concentrated to ionize air close to the conductors, and can result in a partial discharge of electrical energy (corona discharge or corona). Corona from conductors and hardware may cause audible noise and radio noise (which may interfere with	✓	✓	✓	Implementing design and engineering features and construction techniques to reduce corona would reduce audible noise, radio and television interference, and power losses that result in operating inefficiencies.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
communications). Transmission line materials that have been designed and tested to minimize corona would be used. A bundle configuration and larger conductors would be used to limit audible noise, radio interference, and television interference due to corona. Tension would be maintained on all insulator assemblies to ensure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.				
27. Respond to Complaints of Radio or Television Interference The Applicant would respond to complaints of line-generated radio or television interference by investigating the complaints and implementing appropriate mitigating measures where appropriate and possible. In addition, the transmission lines would be patrolled by air or inspected on the ground on a periodic basis, in compliance with the Applicant's standards, so damaged insulators or other line materials that could cause interference are repaired or replaced.			✓	As implied, the Applicant would maintain the transmission line to avoid or minimize line-generated radio and television interference.
28. Avoid Induced Currents and Voltages The Applicant would apply grounding or other methods where possible to minimize or eliminate problems of induced currents and voltages onto conductive objects sharing the same right-of-way, to meet the appropriate codes.		✓	✓	As stated, applying grounding or other methods, where possible, would avoid or minimize problems of induced current and voltages on conductive objects.
29. Use of High-visibility Markers for Air Traffic Safety Towers and/or shield wires would be marked with high-visibility devices (i.e., marker balls or other marking devices) where required by governmental agencies with jurisdiction (i.e., Federal Aviation Administration). An offset catenary on separate poles would be used in lieu of marking the conductor. Tower heights would be less than 200 feet to avoid the need for aircraft obstruction lighting.	✓			Use of high-visibility markers is intended to avoid potential for air-traffic collision with the transmission line.

Table 2-7. Design Features of the Project for Environmental Protection				
Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
30. Reduce Visual Impacts Dull-galvanized steel for lattice towers and non-specular conductors would be used to reduce visual impacts.	✓	✓		The use of these materials is effective in minimizing the visual contrast introduced by the structures, conductors, and insulators. This reduced contrast also allows for greater visual absorption of the B2H Project into the surrounding landscape.
31. Compliance with National Historic Preservation Act In accordance with the Programmatic Agreement (to comply with Section 106 of the National Historic Preservation Act) entered into among the BLM; USFS; the states of Idaho and Oregon; consulting parties; and tribes, specific measures to mitigate effects on cultural resources would be developed and implemented to mitigate identified adverse impacts.	✓	✓		As implied, the intent is to develop site-specific measures to mitigate effects on cultural resources. These may include B2H Project modifications (e.g., selective placement of structures, span sites) to avoid adverse impacts, cultural resources monitoring of construction activities to avoid or minimize damage to discoveries, and data recovery studies to minimize loss of data important to the historical record.
32. Maintain Existing Watering Facilities Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) would be repaired or replaced if they are damaged or destroyed by construction and/or maintenance activities to their predisturbed condition as required by the landowner or land-management agency. Should construction and/or maintenance activities prevent use of a watering facility while livestock are grazing in that area, then the Applicant would provide alternate sources of water and/or alternate sources of forage where water is available.		✓	✓	This would rectify the impact on stock-watering facilities by repairing or replacing such facilities if they are damaged or destroyed or an alternate water source is needed.
33. Maintain Function of Livestock Containment Facilities Fences, gates, and walls would be replaced, repaired, or reclaimed to their original condition as required by the landowner or the land-management agency in the event they are removed, damaged, or destroyed by construction activities. Fences would be braced before cutting. Temporary gates or enclosures would be installed only with the permission of the landowner or the land-management agency and would be removed/reclaimed following construction unless approved by the land management agency or landowner to be left after construction is complete. Cattle guards or permanent access gates would be installed where new permanent access roads cut		✓	✓	These procedures are intended to avoid, minimize, rectify or eliminate impacts that could occur on livestock grazing operations and/or range improvements by taking pre-cautions to maintain the function of the fences, gates, and walls.

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
through fences on land administered by an affected federal agency or other grazing lands. Temporary gates across breached fences may be required when livestock are actively grazing an area in which the breached fence is located when construction activities have halted for a time. This temporary gate would prevent livestock on one side of the fence from going to the other side through the breach. Should construction activities prevent use of a facility, such as a corral when that corral is needed to facilitate movement of livestock, then the Applicant would provide a temporary corral to facilitate movement of livestock.				
34. Avoid Calving, Lambing, and Trailing Areas Calving, lambing, and trailing areas would be avoided when in use by livestock operations to the extent practicable. Trailing areas (areas where livestock producers move livestock across lands to facilitate proper grazing management) can occur throughout the B2H Project area and timing may vary throughout the year. Prior to construction, the Applicant would coordinate with the applicable land-management agency or private landowner to determine when grazing occurs and avoid areas used for calving, lambing, and trailing during construction.		✓	✓	These procedures are intended to avoid, minimize or eliminate impacts that could occur on livestock operations by taking precautions to avoid interruptions to calving, lambing and trailing areas when in use.
35. Avoid Agricultural Operations On agricultural land, the right-of-way would be aligned, insofar as is practicable, to reduce the impact on farm operations and agricultural production.	✓			Avoidance of agricultural operations through the design and engineering of the B2H Project is intended to preclude interference with agricultural operations.

Table 2-7. Design Features of the Project for Environmental Protection

Design Feature	Application Phase[1]			Effectiveness
	Design and Engineering	Construction	Operation and Maintenance	
36. Minimize/Reduce Interference with Agricultural Operations Construction and maintenance activities would occur as practicable to minimize impacts on agricultural operations. In cultivated agricultural areas, soil compacted by construction and maintenance activities would be decompacted or the landowner compensated accordingly.		✓	✓	Where construction and maintenance activities occur on agricultural lands, this measure is intended to minimize the impact of these activities through the timing and coordination of them with the agriculture operations.
37. Patrol and Maintain the Project The transmission line and rights-of-way would be patrolled regularly and properly maintained in compliance with applicable safety codes.			✓	Regular patrol of the transmission line and rights-of-way results in recommendations for corrective maintenance, including maintenance of vegetation, access roads, as well as the transmission line.

Table Notes:

[1]Design features of the B2H Project for environmental protection are measures or procedures that are part of the B2H Project description and implemented as standard practice and include measures or procedures that could avoid, minimize, reduce, or rectify (or eliminate over time) adverse impacts. These three columns refer to the phase and/or phases of the B2H Project during which design features are relevant (i.e., during design and engineering, construction, and/or operation and maintenance).

[2]Distances represent default Riparian Conservation Area widths recommended in PACFISH, and are consistent with PACFISH (USFS and BLM 1995) and INFISH (USFS 1995) strategies, and the Updated Interior Columbia Basin Strategy – Memorandum #1920 (BLM, USFS, USFWS, EPA, and NOAA Fisheries 2014).

2.3.4.1 Decommissioning

Typically, transmission lines that have been regularly maintained continue to provide service longer than the projected service life of at least 50 years. At the end of the service life of the B2H Project, assuming that it is not upgraded or otherwise kept in service, the transmission line, service roads, and other associated facilities would be decommissioned. At such time, a plan for dismantling and removing conductors, insulators, and hardware from the right-of-way would be developed and approved by the permitting agencies, and additional NEPA analysis would be completed, if necessary. Tower and pole structures would be removed and foundations demolished to a point below the ground surface and buried. All long-term disturbances on federal land would be restored in accordance with a Termination and Reclamation Plan approved by the federal land-management-agency Authorized Officer, as appropriate. Since it is not possible to know which facilities would be needed and would remain and/or facilities that would be removed, and it is difficult to predict the status of land use and policy regarding decommissioning and reclamation at a point that far in the future, the effects of decommissioning of the B2H Project are not analyzed in this EIS. Requirements for decommissioning and reclamation (including environmental protection) would have to be addressed in a comprehensive Termination and Reclamation Plan (or equivalent) when decommissioning is proposed. Such a plan would need to be filed 2 years before the termination of the right-of-way and approved by the permitting agencies.

A decommissioning bond also will be required 2 years prior to the expiration of the right-of-way grant (i.e., 30 years with the right of renewal) and USFS special-use authorization in the event the holder fails for whatever reason to comply with the terms, conditions, and special stipulations of the grant or to renew the right-of-way grant(s) (and USFS special-use authorization) at the end of the appropriate terms. The decommissioning bond amount is to be determined with a Reclamation Cost Estimate (RCE) Report submitted for the Applicant by an independent state-certified engineer, approved by the agencies and containing engineer’s seal, and the final amount approved by the BLM and USFS, in an amount sufficient to include all expenses related to the decommissioning, removal, and restoration of the right-of-way grant(s) and USFS special-use authorization on BLM- and USFS-administered land, respectively. All costs of preparing and submitting this report shall be borne by the holder. If the right-of-way grant and special use authorizations are renewed by the BLM or USFS, the bond will be terminated. If the grant is not renewed, the BLM will hold the bond until reclamation acceptable to the BLM Authorized Officer and USFS Deciding Official is completed.

2.4 Alternatives Development

The NEPA requires federal agencies to “…study, develop, and describe appropriate alternatives to recommend courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources” (NEPA Section 102(2)(E)). The Council on Environmental Quality Forty Most Asked Questions Concerning CEQ’s NEPA Regulations provide that “reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense rather than simply desirable from the standpoint of the applicant" (CEQ 1981: Question 2a).

The Applicant's process to identify the initial, preliminary alternative routes and, ultimately, an Applicant's Proposed Action Alternative route, or proposed corridor, for the proposed transmission line is summarized in the 2010 Siting Study (Idaho Power Company 2010) and 2012 Supplemental Siting Study (Idaho Power Company 2012) (available at http://www.boardmantohemingway.com/aspx). BLM considered, in part, the Applicants' Proposed Action Alternative along with the BLM's purpose and need in developing alternatives to be analyzed in the EIS. Between the Draft EIS and Final EIS, revisions were made to the network of alternative routes in response to comments on the Draft EIS as described in Section 2.1.1.

2.5 STUDY AND ANALYSIS METHODS

Comments on the Draft EIS suggested the need to describe further the approach used for studying, analyzing, and comparing the alternative routes to clarify information presented and support conclusions. In response, the following section has been added to the EIS to summarize the overall approach used for studying, analyzing, and comparing the alternative routes developed.

2.5.1 STUDYING AND ANALYZING THE ALTERNATIVES

The following text summarizes the approach used for studying, analyzing, and comparing the alternative routes developed in response to the need for the B2H Project and the need for the affected federal agencies to respond to the Applicant's application for right-of-way on federal land. Consistent with Section 102(2)(A) of NEPA, the process described uses "a systematic interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making, which may have an impact on man's environment" (as specified in 40 CFR 1507.2). Tiered from the overall approach, methodologies adapted for each resource study are presented in the introductory information in resource section in Chapter 3.

This section includes a description of baseline data collection and the method for assessing impacts and applying measures to avoid, reduce, minimize, or eliminate those impacts (Section 2.5.1.1) and the method for comparing the alternative routes (Section 2.5.1.1) from which a route exhibiting the least impact emerges. The process is summarized in Figure 2-19. In concert with environmental results, administrative, management, and current land-use factors are considered by the participating agencies to derive the Agency Preferred Alternative (Section 2.7). System planning and reliability, engineering, costs, safety, schedule, and constructability are among the factors the Applicant considers to identify its Applicant's Proposed Action Alternative (Section 2.8).

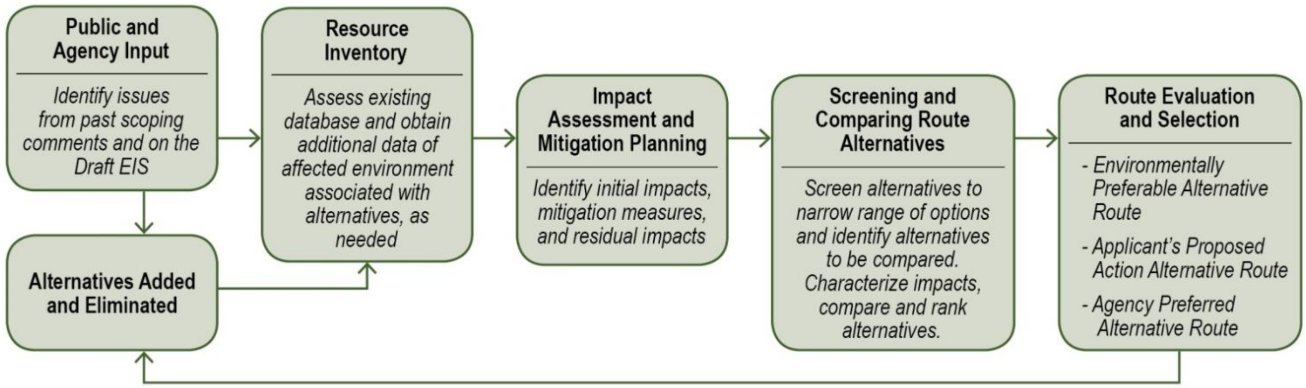


Figure 2-19. Boardman to Hemingway Transmission Line Project Environmental Study Approach

2.5.1.1 Studying and Analyzing Alternatives

Relevant law and policy and the issues identified through the scoping process guide what studies of the natural, human, and cultural environments federal agencies must conduct and address in an interdisciplinary manner in the EIS. The studies for B2H Project were designed to develop an inventory of environmental data reflecting the existing condition of the environment in sufficient detail to:

- Predict potential or probable impacts on the environment brought about by the construction, operation, and maintenance of the proposed transmission line, access roads, and ancillary facilities along each of the alternative transmission line routes;
- Prepare realistic recommendations to avoid, minimize, rectify, reduce, or eliminate impacts identified during the analysis;
- Compare the alternative routes based on interdisciplinary resource analysis and identify the alternative route exhibiting the least impact;
- Identify an Agency Preferred Alternative in response to local concerns and in collaboration with the cooperating agencies; and
- Meet the environmental reporting requirements of the BLM, in coordination with cooperating federal and state agencies and county and local governments.

Resource Inventory

Data on the existing condition of each resource were gathered and compiled, using the most recent data available—primarily literature, published and unpublished reports, land-use plans, maps, and agency databases. Data gathered for visual resources were verified by field reconnaissance. Comments on the Draft EIS informed the BLM of new and/or updated data, which were gathered and compiled for use in preparing the Final EIS. During an agency workshop conducted in August 2015, the BLM requested the agency interdisciplinary team and cooperating agencies to review the updated data for adequacy and provide information regarding additional issues, concerns, policies, and regulations.

For most of the resources, inventories for the EIS were developed to describe the existing environment in the study corridors along the alternative routes in sufficient detail to assess potential direct and indirect impacts that could result from the proposed B2H Project. The width of the study corridor varies for some resources based on the area that potentially could be affected (Table 2-8). Analysis of air quality is based on regional data. Data used to assess potential impacts on social and economic conditions are countywide and statewide and are not extracted for study-corridor-level analysis. Resource inventories informed development of the Affected Environment section documented in Chapter 3.

Table 2-8. Study Corridors by Resource

Resource	Study-Corridor Width (miles)
Earth resources	1
Paleontological resources	1
Water resources	1
Biological resources (vegetation, special status plants, wildlife, special status wildlife, migratory birds, fish and aquatics)	1
Land use	1
Agriculture	1
Recreation	1
Transportation	1
Potential congressional designations	1
Lands with wilderness characteristics	1
Visual resources	10
National trails system	10
Cultural resources	4

Table Note: Analysis of air quality is based on regional data. Data and information used to assess potential social and economic impacts are based on countywide and statewide data and are not extracted for corridor-level assessment.

The alternative routes (and study corridors) are centered on a line referred to as the reference centerline. The reference centerlines were mapped in detail sufficient for analysis for the EIS. Precise locations of the centerline would be refined through engineering surveys on the route selected for the transmission line prior to construction of the B2H Project. 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 are numbered generally from north to south. Similarly, a segment is composed of alternative routes that share common endpoints determined by the point of intersection with alternative routes in an adjacent segment; the common endpoint is referred to as a segment node.

To facilitate analysis and reference, mileposts are marked along the reference centerline of each link. Resource data collected for the area in a study corridor are input, stored, and retrieved by link number and milepost (to 0.1 mile). Where appropriate, resource discussions in this document (principally Chapter 3) refer to links and mileposts to provide a geographic reference to the resource data. Maps displaying resource inventory data and impacts are in Volume II – Maps. The results of the inventory of resources are documented by link and milepost in resource inventory summaries and maps.

IMPACT ASSESSMENT AND MITIGATION PLANNING

Impacts on the environment can result directly (caused by the action and occurs at the same time and place) or indirectly (caused by the action and is later in time or farther removed in distance, but still reasonably foreseeable) and can be temporary (short-term), long-term, or permanent. The assumptions for each resource define temporal scope of analysis. In this analysis, temporary environmental effects predicted to occur during construction of the B2H Project that would be anticipated to return to a preconstruction condition at or within 5 years of the end of construction were considered short-term impacts. Environmental effects anticipated to be remaining after 5 years are considered long-term impacts. Permanent impacts are those that would be anticipated to endure beyond the life of the B2H Project, including irreversible and irretrievable commitment of resources. Impacts can be beneficial (positive) or adverse (negative) and can vary in significance from no change or only slightly discernible change to a full modification of the environment. Cumulative impacts result from the incremental effect of an action when added to other past, present, and reasonably foreseeable future actions (RFFA) and can result from individually minor but collectively significant actions taking place over a period of time. The approach used to address cumulative effects is described in Section 3.3.

Once the environmental inventory (baseline resource data) was compiled for each alternative route and the data were reviewed by the lead and cooperating agencies, potential effects of the proposed B2H Project were assessed and measures were recommended, where appropriate, to avoid, minimize, rectify, reduce, or eliminate the impacts (refer to subsection Mitigation Planning and Effectiveness below). The process of assessing impacts and applying measures to reduce impacts is a systematic interdisciplinary analysis that first identifies initial impacts based on a comparison of the proposed B2H Project (i.e., the predicted types and amounts of disturbance) and the existing condition of the environment (before the B2H Project). Then, measures may be applied selectively on a case-by-case basis and often in localized areas to effectively reduce impacts further, thereby resulting in residual impacts or the impacts remaining after the application of the selective measures. Figure 2-20 provides an overview of the impact assessment and mitigation planning process. Results of impact assessment and mitigation planning are presented in the Environmental Consequences sections in Chapter 3.

ESTIMATED GROUND DISTURBANCE AND VEGETATION CLEARING

The first step of the analysis was to determine the types and amount of ground disturbance that could occur based on the design and typical specifications of the proposed facilities, construction techniques (including design features of the project for environmental protection [Table 2-7]) and equipment used, extent and duration of the construction, requirements for operation of the transmission line and associated facilities, and activities associated with routine maintenance.

Most of the potential physical impacts that could occur, including ground disturbance, would result from the following construction activities:

- Upgrading existing roads or constructing new roads for access where needed
- Preparing structure sites, multi-use areas, and communication station sites
- Assembling and erecting tower structures
- Stringing conductors (e.g., wire pulling-and-tensioning sites and wire-splicing sites)

In addition, impacts on some resources would occur following construction from the presence of the transmission lines and access roads. Also, periodic maintenance activities could cause temporary impacts.

Since the B2H Project facilities have not been fully designed and locations of the transmission line facilities are not known, for the purpose of estimating impacts, the amount of ground that could be disturbed as a result of implementation of the B2H Project was estimated based on the typical design characteristics of the 500-kV transmission line and ancillary facilities (Section 2.3.1), including tower sites, multi-purpose construction yards, communication regeneration station sites, etc., as well as the 230-kV line and 138/69-kV line segments potentially planned for relocation. The estimated ground disturbance associated with using existing access roads or upgrading or constructing access roads also was considered. Temporary ground disturbance during construction would be associated with structure work areas, wire-splicing sites, wire pulling-and-tensioning sites, multi-purpose construction yards, and temporary access roads. Permanent ground disturbance would be associated with structure foundation areas, communication station sites, and permanent access roads. Estimated ground disturbance from access road per mile of transmission line is presented in Table 2-9. Estimated ground disturbance associated with the 500-kV transmission line is presented in Table 2-10. Estimated ground disturbance associated with the 230-kV and 138/69-kV line segments to be relocated is presented in Table 2-11, and disturbance associated with the 230-kV double-circuit line (additional action for replacing the BPA's 69-kV line is presented in Table 2-12).

Table 2-9. Access Levels and Potential Ground Disturbance

Project Access Level		Estimated Disturbance per Mile of Transmission Line
1	Use existing road (0 to 15 percent slopes) within half the distance of the typical span from project centerline; no improvements required; spur roads	2.8 acres
2	Use existing road (greater than 15 percent slopes) within half the distance of the typical span from project centerline; improvements required; spur roads	6.7 acres
3	Construct new access road (0 to 8 percent slopes)	3.5 acres
4	Construct new access road (8 to 15 percent slopes)	5.3 acres
5	Construct new access road (15 to 30 percent slopes)	8.5 acres
6	Construct new all-terrain vehicle access road (greater than 30 percent slopes)	14.2 acres

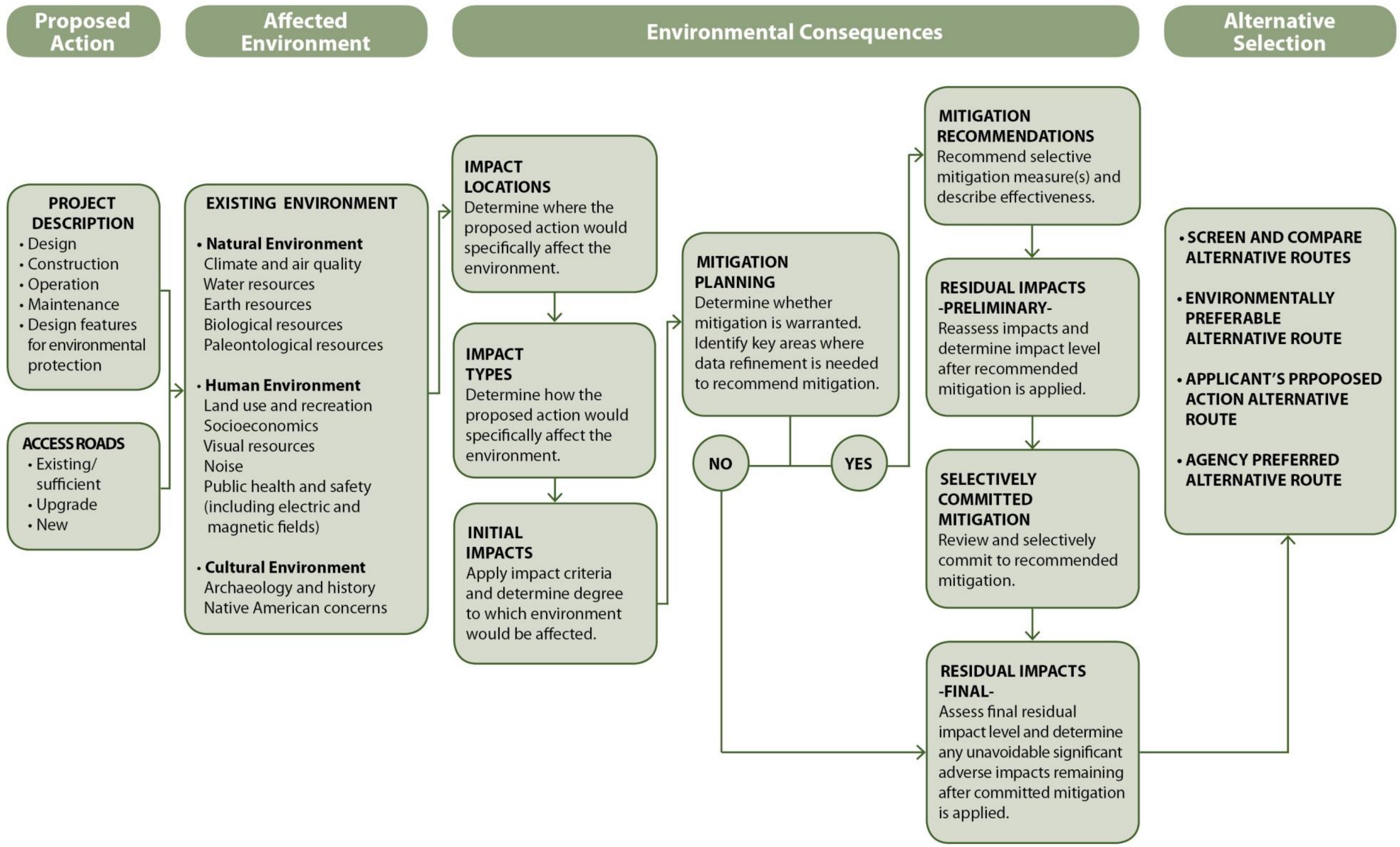


Figure 2-20. Impact Assessment and Mitigation Planning Process

Table 2-10. Summary of Estimated Ground Disturbance and Vegetation Clearing for the 500-Kilovolt Transmission Line Alternative Routes by Segment

Alternative	Temporary Disturbance (acres)[1,5]	Permanent Disturbance (acres)[2,5]	Total Disturbance (acres)[3,5]	Transmission Line Right-of-way Vegetation Clearing (acres)[4,5]
Segment 1 - Morrow-Umatilla				
Applicant's Proposed Action	1,395	512	1,907	442
Variation S1-B1	*92*	*50*	*142*	*181*
Variation S1-B2	*92*	*44*	*136*	*162*
East of Bombing Range Road	1,402	512	1,913	442
Applicant's Proposed Action – Southern Route	1,512	578	2,090	484
West of Bombing Range Road – Southern Route	1,455	656	2,111	484
Longhorn	1,361	507	1,867	442
Interstate 84	1,307	478	1,784	442
Variation S1-A1	*285*	*75*	*360*	*0*
Variation S1-A2	*285*	*122*	*408*	*0*
Interstate 84 – Southern Route	1,441	548	1,989	484
Segment 2 - Blue Mountain				
Applicant's Proposed Action	522	243	764	363
Variation S2-A1	*43*	*15*	*58*	*45*
Variation S2-A2	*45*	*16*	*60*	*48*
Variation S2-B1	*57*	*28*	*85*	*41*
Variation S2-B2	*59*	*26*	*85*	*45*
Variation S2-C1	*143*	*78*	*221*	*188*
Variation S2-C2	*136*	*55*	*191*	*172*
Variation S2-E1	*35*	*17*	*52*	*38*
Variation S2-E2	*40*	*18*	*58*	*38*
Variation S2-F1	*187*	*73*	*260*	*10*
Variation S2-F2	*188*	*78*	*266*	*6*
Glass Hill	520	232	752	331
Variation S2-D1	*66*	*42*	*109*	*102*
Variation S2-D2	*63*	*35*	*98*	*76*
Mill Creek	525	259	784	274
Segment 3 - Baker Valley				
Applicant's Proposed Action	852	386	1,238	0
Variation S3-A1	*191*	*68*	*259*	*0*
Variation S3-A2	*188*	*63*	*252*	*0*
Variation S3-B1	*214*	*97*	*311*	*0*
Variation S3-B2	*222*	*92*	*315*	*10*
Variation S3-B3	*227*	*85*	*312*	*10*
Variation S3-B4	*221*	*79*	*300*	*10*
Variation S3-B5	*216*	*85*	*301*	*10*

Table 2-10. Summary of Estimated Ground Disturbance and Vegetation Clearing for the 500-Kilovolt Transmission Line Alternative Routes by Segment

Alternative	Temporary Disturbance (acres)[1,5]	Permanent Disturbance (acres)[2,5]	Total Disturbance (acres)[3,5]	Transmission Line Right-of-way Vegetation Clearing (acres)[4,5]
Variation S3-C1	*326*	*177*	*502*	*0*
Variation S3-C2	*335*	*177*	*512*	*0*
Variation S3-C3	*326*	*189*	*515*	*22*
Variation S3-C4	*330*	*193*	*524*	*22*
Variation S3-C5	*324*	*252*	*576*	*41*
Variation S3-C6	*381*	*304*	*685*	*92*
Flagstaff A	853	375	1,228	10
Timber Canyon Alternative	1,085	606	1,691	655
Flagstaff A – Burnt River Mountain	853	387	1,241	32
Flagstaff B	864	375	1,239	10
Flagstaff B – Burnt River West	859	445	1,305	51
Flagstaff B – Durkee	920	502	1,422	102
Segment 4 - Brogan				
Applicant's Proposed Action	619	335	953	0
Variation S4-A1	*91*	*63*	*154*	*0*
Variation S4-A2	*93*	*57*	*149*	*0*
Variation S4-A3	*94*	*58*	*153*	*0*
Tub Mountain South	625	277	901	0
Willow Creek	534	244	777	0
Segment 5 - Malheur				
Applicant's Proposed Action	635	250	884	0
Variation S5-A1	*105*	*36*	*141*	*0*
Variation S5-A2	*114*	*33*	*147*	*0*
Variation S5-B1	*37*	*19*	*56*	*0*
Variation S5-B2	*43*	*14*	*57*	*0*
Malheur S	682	291	974	0
Malheur A	665	267	932	0
Segment 6 - Treasure Valley				
Applicant's Proposed Action	440	173	613	0
Variation S6-A1	*138*	*67*	*205*	*0*
Variation S6-A2	*137*	*59*	*196*	*0*

Table 2-10. Summary of Estimated Ground Disturbance and Vegetation Clearing for the 500-Kilovolt Transmission Line Alternative Routes by Segment				
Alternative	Temporary Disturbance (acres)[1,5]	Permanent Disturbance (acres)[2,5]	Total Disturbance (acres)[3,5]	Transmission Line Right-of-way Vegetation Clearing (acres)[4,5]
Variation S6-B1	*224*	*88*	*312*	*0*
Variation S6-B2	*217*	*91*	*309*	*3*

Table Notes:

[1]Temporary Disturbance: Estimated area of disturbance associated with structure work areas (250 by 250 feet per structure, except along the Bombing Range Road where structure works areas would be 90 by 250 feet), wire tensioning/pulling sites, which includes light duty fly yards (10 acres every 1.5 miles), and multi-use areas including fly yards (30-acre site located approximately every 15 miles);

[2]Permanent Disturbance: Estimated area of disturbance associated with the area occupied by structures (pads) (0.06 acre per structure every 1200 feet), communication stations (100 by 100 feet, one station approximately every 40 miles), Longhorn Substation (20 acres), and permanent access roads.

[3]Total Disturbance: the sum of construction and temporary disturbance

[4]Transmission Line Right-of-way Vegetation Clearing: Vegetation clearing has been estimated in the transmission line right-of-way only. Calculations only include vegetation types with the potential to grow more than 5 feet tall (aspen, juniper and mahogany woodland, and mixed conifer forest) and overlap with other disturbance in the B2H Project right-of-way. Vegetation clearing was not calculated for access roads due to the access road design not being available for the alternative routes at this time and is required to accurately identify locations of temporary and permanent access roads

[5]Disturbance calculations include an additional 5 percent contingency. Acres in table are rounded; therefore, they may not sum exactly.

Table 2-11. Summary of Estimated Ground Disturbance and Vegetation Clearing for the 230-Kilovolt and 138/69-Kilovolt Transmission Line Rebuilds (Segment 3)				
Alternative	Total Length (miles)	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)
230-kV transmission line relocation	0.9	0.96	0.04	1.00
138/69-kV transmission line relocation	5.3	1.19	0.15	1.34

Table Source: Idaho Power Company 2016

Table 2-12. Summary of Estimated Ground Disturbance and Vegetation Clearing for the 230-kV Double-circuit Rebuild (Segment 1)				
Alternative	Total Length (miles)	Temporary Disturbance (acres)	Permanent Disturbance (acres)	Total Disturbance (acres)
Design Option 1 (partial removal of 69-kV line)	12.2	32.8	1.61	64.4
Design Option 2 (full removal of 69-kV line)	15.6	80.3	2.06	82.4
Design Option 3 (full removal of 69-kV line with step-down substation)	15.6	80.3	4.26	84.6

Table Source: Idaho Power Company 2016.

As described in Section 2.3.1.5, existing access roads would be used in their present condition without improvements, to the extent possible, to limit new disturbance for the B2H Project. In areas where improvements are required or deemed to be in the best interest of the B2H Project for future operation and maintenance use, the roads would be graded and/or graveled to provide a smooth all-weather travel surface. In areas where it is not practicable to use existing roads to fulfill the access requirements of the B2H Project, the existing road would be upgraded or a new road would be constructed. Since the B2H Project facilities have not been fully designed and locations of the transmission line facilities are not known, for the purpose of estimating impacts, ground disturbance associated with upgrading existing roads or constructing new roads was predicted through the development of a model. The predictive model was developed to (1) consider where existing roads can be used for construction, operation, and maintenance and where improved or new roads are required; (2) estimate potential ground disturbance resulting from the construction of new spur roads, improvement of existing access roads, and construction of new access roads; and (3) establish a baseline condition for access to conduct initial impact assessments for each resource evaluated in the EIS (e.g., visual resources, biological resources, land use, etc.).

Access levels are predictions of the general type of access (i.e., use existing roads, improve existing roads, or construct new roads) that would be required for every mile of each B2H Project alternative route, and the associated amount of disturbance the access level would create. Although the method incorporates road design criteria, it does not go to the level of actual road design. As a result, some variation is anticipated between the disturbance predictions generated from the access-level modeling and the actual disturbance of designed and engineered access roads. Access-level disturbance predictions have been developed to be conservative to ensure predictions for ground disturbance are not underestimated in relation to actual B2H Project disturbance and impacts. For purposes of analyzing impacts on resources and assessing likely ground disturbance associated with the B2H Project, the following six access levels, based primarily on slope, were developed based on information provided in the Applicant's description of the B2H Project:

- Access Level 1: Use existing roads (0 to 15 percent slope)
- Access Level 2: Use existing roads (greater than 15 percent slope)
- Access Level 3: Construct new access, flat to rolling terrain (0 to 8 percent slope)
- Access Level 4: Construct new access, rolling terrain (8 to 15 percent slope)
- Access Level 5: Construct new access, steep terrain (15 to 30 percent slope)
- Access Level 6: Construct new all-terrain vehicle (ATV) access, very steep terrain (greater than 30 percent slope)

In addition to ground disturbance, vegetation types that have the potential to grow more than 5 feet tall (e.g., aspen, montane forest, mountain shrub, pinyon-juniper, and riparian) would be cleared from the transmission line right-of-way. Areas of the right-of-way were identified where these vegetation communities occur. Ground disturbance in the right-of-way associated with access roads, structure work areas, wire-splicing sites, wire pulling-and-tensioning sites, and multi-use areas where these vegetative communities occur would overlap with the areas of transmission line right-of-way vegetation clearing.

Initial Impacts

As described in the previous section, based on estimated ground disturbance and resource inventory data reflecting the existing environment, each resource specialist determined the types and amounts of impacts that could occur on the resource (i.e., initial impacts). Computer-assisted models were developed to support this determination, which allowed the method used for each resource to be tailored to specific requirements, criteria, and assumptions for analysis of each resource. Qualitative and quantitative variables of resource sensitivity, resource quantity, and estimated ground disturbance were considered in predicting the intensity of initial impacts. The intensity of the environmental effect also can vary. In this analysis, the intensity of impacts was described in the following levels: high impact—that could cause substantial change or stress to an environmental resource or use (severe adverse or exceptional beneficial effects); moderate impact—that potentially could cause some change or stress to an environmental resource or use (readily apparent effects); low impact—that could be detectable but slight; and no identifiable impact. What constitutes a high, moderate, or low impact on a resource varies by resource and is described in the study methodology for each resource in Chapter 3, as are the assumptions for analysis made regarding each resource.

Mitigation Planning and Effectiveness

After initial impacts were identified for each resource, additional measures to mitigate impacts further for environmental protection (Table 2-13) were applied to avoid, minimize, or rectify/reduce over time moderate or high impacts. These selective mitigation measures were developed in collaboration with the BLM and cooperating agencies and include measures or techniques recommended or required (depending on land ownership) by BLM and USFS after initial impacts were identified and assessed. As such, selective mitigation measures provide a planning tool for minimizing potential adverse impacts. For some resources (e.g., biological and cultural resources), pedestrian surveys conducted using agency-approved protocols would be required prior to construction (and based on the final design of the B2H Project). The survey results would be used by the agencies to refine the mitigation requirements and further inform the final POD.

Once an alternative route is selected, the Applicant would coordinate with the BLM and other land-management agencies or landowners, as appropriate, to refine the implementation of mitigation at specific locations or areas based on final B2H Project design. For example, if a road closure was recommended, the Applicant would work with the applicable land-management agency or landowner to determine the specific method of road closure most appropriate for the site or area (e.g., barricading with a locking gate, obstructing access on the road using an earthen berm or boulders, revegetating the roadbed, or obliterating the road and returning it to its natural contour and vegetation). This detailed mitigation would be incorporated into the final POD prior to construction of the B2H Project and prior to receiving a notice to proceed for the B2H Project.

Table 2-13. Selective Mitigation Measures

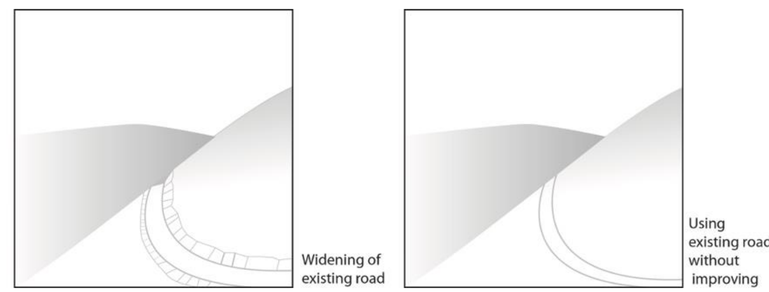
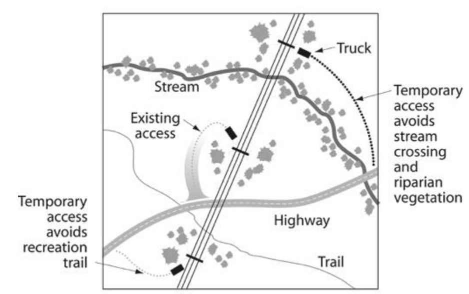
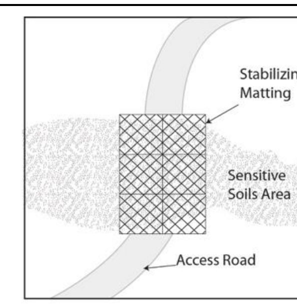
Mitigation Measure	Mitigation Examples	Application Phase[1]			Mitigation Effectiveness
		Design and Engineering	Construction	Operation and Maintenance	
1. Limit Widening of Existing Roads in Areas of Sensitive Soils, Vegetation, and/or Stream Crossings In areas where soils, vegetation, and/or streams are sensitive to disturbance, existing roads to be used for construction access and/or B2H Project maintenance would not, as much as possible/practicable, be widened or otherwise upgraded except in areas necessary to make existing roads passable and safe.		✓			Avoiding unnecessary access road upgrades would reduce the amount of habitat disturbed or removed and limit visual contrast that could occur from additional earthwork. Avoiding road upgrades would help in reducing the potential for indirect effects such as damage or loss of vegetation, spread of noxious weeds, harassment of wildlife, vandalism of cultural resources, and disturbance to sensitive land uses (e.g., parks, preservation, and recreation areas). Limiting ground disturbance would; minimize exposure of soils that are highly or moderately susceptible to wind or water erosion. The potential for increased erosion and sedimentation as a result of soil compaction and/or decompaction would be reduced as well as the loss of soil-stabilizing vegetation.
2. Use Existing Access or Stream Crossings, or both, for Sensitive Resources Avoidance Existing access or stream crossings, or both, would be used as much as possible or practicable for construction and maintenance to avoid disturbance of sensitive resources crossed by the B2H Project.			✓	✓	Similar to Selective Mitigation Measure 1, this mitigation measure would minimize ground-disturbing clearing and construction activities in areas of sensitive resources, thereby limiting the amount of habitat disturbed, removed, or fragmented. This would reduce the risk of isolation affecting the viability of special status wildlife subpopulations in these habitat areas. Visual contrast would be reduced by locating and constructing access routes, where they would be less visible from viewing locations. Minimizing ground-disturbing construction activities in the vicinity of fish-bearing streams and/or specially designated waters would limit soil disturbance, thereby minimizing the potential for increased erosion and sedimentation. In addition, limiting crossing of trails and other linear land uses would reduce direct conflicts with their use and function.
3. Use of Matting (Stabilization) in Sensitive Resource Areas To minimize ground disturbance in sensitive resource areas, matting or other similar practices for ground stabilization could be used for B2H Project access and work areas.			✓	✓	Similar to Selective Mitigation Measures 1 and 2, this selective mitigation measure would minimize ground disturbance in areas of sensitive resources. In particular, in areas where the construction of roads, work areas, or use of overland access, would directly affect resources. Use of matting such as composite or timber mats, would minimize rutting as well as minimize effects on cultural resources located along access routes, after appropriate site recordation in accordance with Section 106 requirements.

Table 2-13. Selective Mitigation Measures

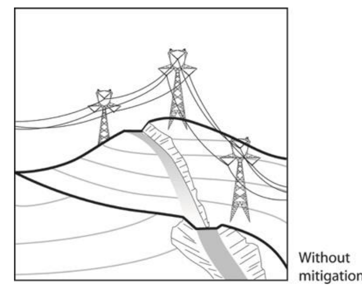
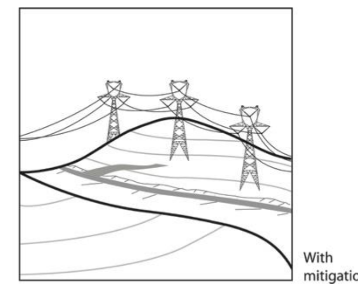
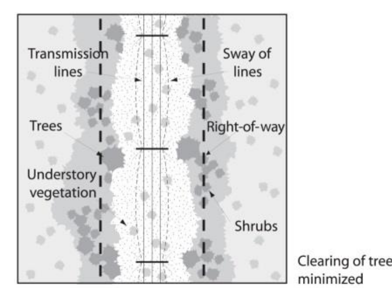
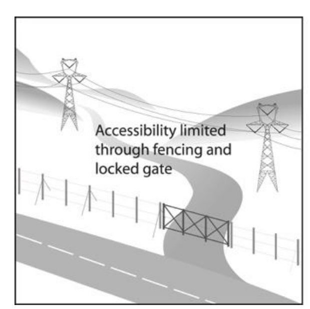
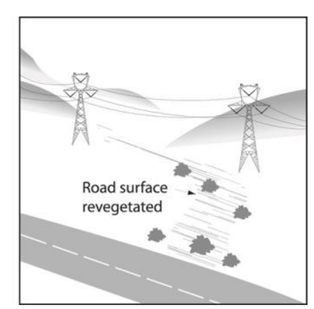
Mitigation Measure	Mitigation Examples	Application Phase[1]			Mitigation Effectiveness
		Design and Engineering	Construction	Operation and Maintenance	
4. Minimize Slope Cut and Fill for Access and Work Areas The alignment of new access roads would follow the landform contours where practicable to minimize ground disturbance and/or reduce scarring (visual contrast) of the landscape. Modification to the size and/or configuration of the structure work areas facilitated by minor structure design adjustments (e.g., altering leg length) would be used to minimize cut and fill slopes and blend contours with existing topography. Additionally, soil amendments or mineral emulsions would be applied, or grading techniques such as slope rounding and slope scarification would be used to blend road and structure work area cuts into the landscape in areas of steep terrain where grading is necessary, in rocky areas, or where soil color would create strong landscape contrasts.		✓			Following the existing land contours and terrain minimizes the cutting and filling of slopes and reduces the potential for the form and line of the landscape to be visually interrupted. This results in reducing visual contrast between the exposed ground of the road or structure work areas and the surrounding environment. Additionally, the application of soil/rock coloring would further reduce the visual contrast between exposed ground and the surrounding environment. Minimizing slope cut and fill also reduces ground disturbance and potential habitat fragmentation. Water runoff is less likely to accelerate soil erosion, thus minimizing (1) potential damage from rutting and drilling, which, in turn, protects adjacent vegetation and (2) potential sedimentation into nearby fish-bearing streams.
5. Minimize Vegetation Clearing for Operational Clearances Removal of vegetation in the right-of-way would be minimized to limit disturbance to timber resources, reduce disturbance to agricultural production, reduce visual contrast, and protect sensitive habitat, subject to structure- and conductor-clearance requirements. Trees and other vegetation would be removed selectively (e.g., edge feathering) to blend the edge of the right-of-way into adjacent vegetation patterns, as practicable and appropriate. Refer to EIS Section 2.3.3.2 for more description of vegetation management.			✓	✓	Selectively removing vegetation (i.e., trees, crops, other vegetative cover) in and along the edges of the right-of-way, or limiting the width of the area cleared in the right-of-way, reduces disruption of habitat, minimizes removal of timber resources, allows compatible land uses to continue, and reduces the visual contrast between the right-of-way and the surrounding environment. Minimizing the number of trees cleared in sensitive habitats would lessen impacts on wildlife habitat connectivity and avian nesting habitat. Minimizing disturbance to agricultural crops reduces production losses and maintains topsoil. Furthermore, feathering the edges of the right-of-way instead of cutting trees and vegetation in a straight line results in a more gradual modification to the environment and the hard visual line created by the cleared right-of-way/forest interface. Minimizing vegetation clearing also reduces the potential for erosion and potential sedimentation in nearby fish-bearing streams.
6. Limit New or Improved Accessibility to Areas Previously Inaccessible In areas of sensitive habitat or areas sensitive to additional public access, new or improved access in the B2H Project area would be limited. New or improved access would be closed or rehabilitated using the most effective and least environmentally damaging methods appropriate to that area (in consultation with the landowner or land-management agency). Methods for road closure or management may include installing locking gates, obstructing the path (e.g., earthen berms, boulders, redistribution of woody debris), revegetating and mulching the surface of the roadbed to make it less apparent, or restoring the road to its natural contour and vegetation.			✓	✓	Closing access roads where they are not needed after construction protects the area resources from further disturbance for the reasons described in Selective Mitigation Measure 1. The closing of these access roads would restore existing natural features as well as limit public access to wildlife populations, reduce stress and disturbance to wildlife, special status wildlife and habitats during critical life-cycle periods, anthropogenic disturbance, and traffic; consequently reducing erosive attributes (e.g., soil compaction, decompaction, rutting). Additionally, visual contrast would be reduced through restoring existing features in naturally intact and highly visible areas.

Table 2-13. Selective Mitigation Measures

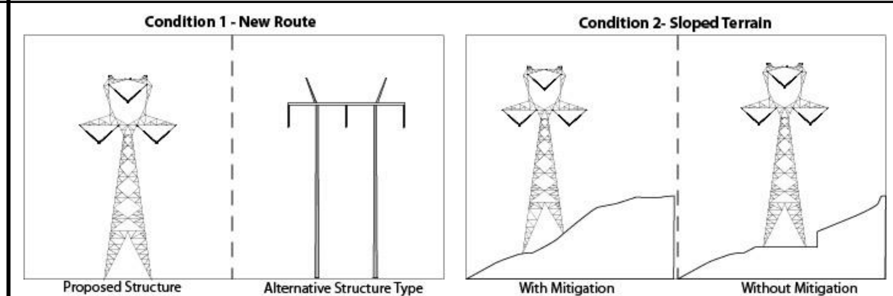
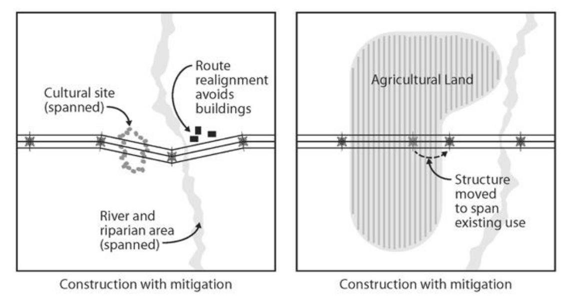
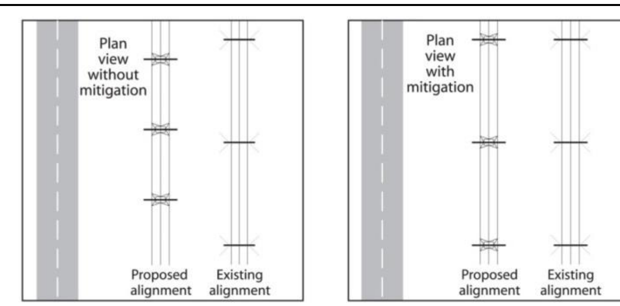
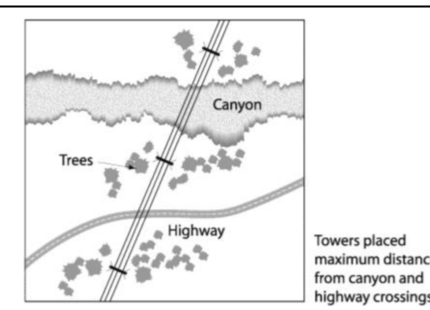
Mitigation Measure	Mitigation Examples	Application Phase[1]: Design and Engineering	Application Phase[1]: Construction	Application Phase[1]: Operation and Maintenance	Mitigation Effectiveness
7. Tower Design Modification The tower design may be modified to reduce resource impacts. Modifications include use of alternative structure type, modifying tower height, modifying tower leg lengths to accommodate varied terrain, and changing tower finish type.		✓			Flexibility in designing the tower, or use of different tower types, would allow tower structures to be more adapted to specific site situations. For example, in areas where there are sensitive views and an existing corridor, the proposed line could parallel an existing line and match the type of tower used along the existing line, minimizing visual contrast. In situations where an alternative structure may be shorter in height, there would be opportunities to screen or backdrop the structures against topography, resulting in reduced visual contrast. Additionally, tower design modification could be used to minimize perching opportunities for aerial predators where sensitive prey species occur (e.g., sage-grouse).
8. Span and/or Avoid Sensitive Features Within the limits of standard tower design, structures would be located to allow conductors to avoid identified sensitive features such as dwellings/buildings and span sensitive existing land uses, natural features, hazardous substance remediation sites, and cultural resource sites. This could be accomplished through methods such as selective tower placement, spanning sensitive features, or realigning the B2H Project centerline (micro-siting).		✓	✓		Flexibility in the placement of towers allows sensitive features to be avoided. Realigning the towers along an alternative route or realigning the alternative route (micro-siting), to the extent practicable, can result in avoiding or minimizing direct and indirect impacts on resources (e.g., cultural, biological, fish-bearing streams, and visual), as well as land uses (e.g., agriculture, parks, hazardous substance remediation, and recreation areas). This mitigation measure would reduce potential loss, degradation, and fragmentation of wildlife habitat; decreasing the risk of isolation between habitat areas and subpopulations. Additionally, the transmission line or associated facilities could be realigned, to the extent practicable, in areas with high concern viewsheds to locate structures to result in reduced visual contrast and visibility.
9. Match Transmission Line Spans Standard tower design would be modified to correspond with spacing of existing transmission line structures of similar voltage and/or span lengths, where feasible and within limits of standard tower design, to reduce visual contrast and/or potential operational conflicts. The normal span would be modified to correspond with existing towers, but not necessarily at every location.		✓			Matching tower spacing with existing parallel lines reduces the visual space occupied by the towers and minimizes the amount of contrast between the man-made structures and the landscape.
10. Maximize Span at Crossings At highway, canyon, and trail crossings, towers would be placed at the maximum feasible distance from the crossing within limits of standard tower design and in conformance with engineering and Applicant requirements to reduce visual impacts and potential impacts on recreation values and to increase safety at these locations from potential off-highway vehicle collisions.		✓			Placing towers at a maximum distance from major or sensitive crossings (e.g., roads and trails) can sometimes be done to reduce the dominance of views resulting from locating structures directly adjacent to these features. Locating structures directly adjacent to highways or over waterways can create potential safety hazards (i.e., vehicle collision with tower). Conversely, placing the towers so that the crossing is at mid-span means the clearance between the conductor and the ground is at its lowest.

Table 2-13. Selective Mitigation Measures

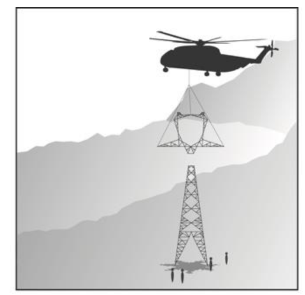
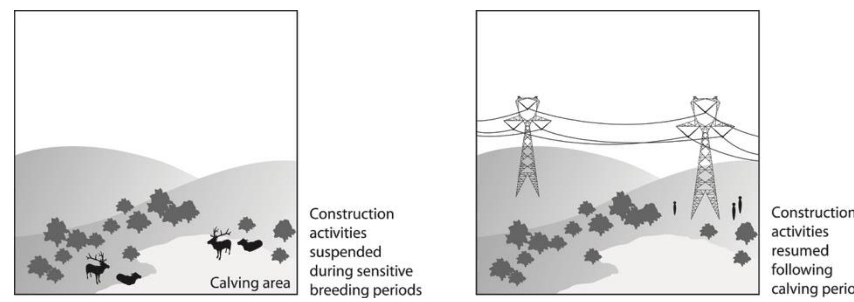
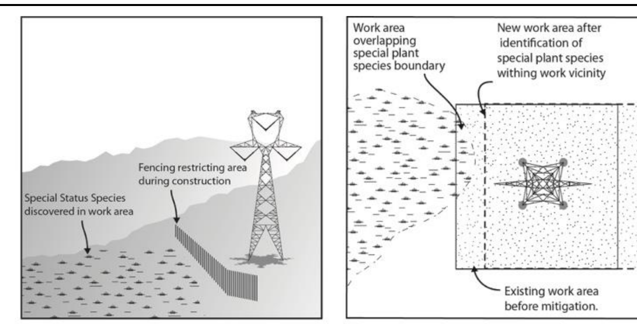
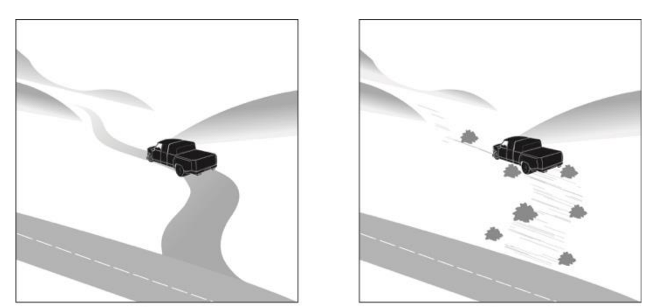
Mitigation Measure	Mitigation Examples	Application Phase[1]			Mitigation Effectiveness
		Design and Engineering	Construction	Operation and Maintenance	
11. Helicopter-Assisted Construction Helicopter-assisted placement of towers during construction and maintenance may be used where practicable to reduce surface impacts in environmental constraint areas or steep terrain locations.			✓	✓	Using helicopters to place towers in steep terrain or otherwise sensitive areas reduces land-use and natural-resource impacts as a result of on-the-ground construction activities. Limiting ground disturbance would reduce the loss of vegetation, accelerated soil erosion, potential damage to cultural resources, and visual impacts. This mitigation is most effective in specially designated areas where the existing access roads would require extensive improvement or the construction of new access roads is not desired, to meet management prescriptions.
12. Seasonal and Spatial Fish and Wildlife Restrictions To minimize disturbance to identified fish and wildlife species during sensitive periods, construction, operation, and maintenance activities would be restricted in designated areas unless exceptions are granted by the Authorized Officer or his/her designated representative and other applicable regulatory agencies (e.g., U.S. Fish and Wildlife Service [USFWS], National Oceanic and Atmospheric Administration Fisheries, state wildlife agencies). A list of seasonal and spatial restriction for biological resources is presented in Appendix B of the EIS.	 		✓	✓	Restricting construction activities or maintenance during identified sensitive periods would avoid potential disturbance of fish and wildlife during critical periods of their life cycles.
13. Spatial Plant Restrictions To minimize disturbance to identified plant species, construction, operation, and maintenance activities would be restricted in designated areas unless exceptions are granted by the Authorized Officer or his/her designated representative and other applicable regulatory agencies (e.g., U.S. Fish and Wildlife Service, state wildlife agencies).	 Construction with mitigation Plan view		✓	✓	Restricting construction activities or maintenance during identified sensitive periods would avoid potential disturbance of plants during critical periods of their life cycles.
14. Overland Access In addition to using overland travel in work areas, overland access to work areas may be used to reduce resource impacts. The construction contractor would use overland access in areas where no grading would be needed to access work areas. Overland access would consist of drive-and-crush (i.e., vehicular travel to access a site without significantly modifying the landscape, cropping vegetation, or removing soil) and/or clear-and-cut travel (removal of all vegetation while leaving the root crown intact to improve or provide suitable access for equipment). Prior to commencement of work activities, overland access routes would be staked. Routes would be specified in the Plan of Development (POD). Use of overland access routes would be restricted based on dry or frozen soil conditions, seasonal weather conditions, and relatively flat terrain.	 Without Mitigation With Mitigation		✓	✓	Overland access, where allowed, would avoid or minimize the removal of surface soil and vegetation where soils are susceptible to wind and water erosion, reducing the potential for erosion and loss of habitat. Avoiding constructing a new road would reduce the potential for increased traffic and the associated indirect effects including the introduction of invasive weeds and special status wildlife habitat fragmentation.

Table 2-13. Selective Mitigation Measures

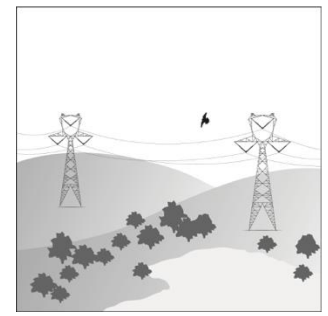
Mitigation Measure	Mitigation Examples	Application Phase[1]			Mitigation Effectiveness
		Design and Engineering	Construction	Operation and Maintenance	
15. Flight Diverters and Perch Deterrents Shield wires, guy wires, and overhead optical ground wire along designated portions of the transmission line with a high potential for avian collisions would be marked with flight diverters or other Bureau of Land Management or U.S. Forest Service approved devices in accordance with agency requirements and Reducing Avian Collisions with Power Lines, The State of the Art in 2012 (APLIC 2012). Portions of the transmission line adjacent to or that cross through waterfowl and general migratory pathways or habitat for high priority species may be marked to reduce the risk of avian collisions. This measure also may include use of devices to deter raptors from perching on transmission line structures in habitat for high priority prey species (e.g., sage-grouse). The specific segments where these devices would be used would be determined in consultation with the appropriate agencies.			✓	✓	Marking guy wires and overhead optical ground wires on segments of the transmission lines that are adjacent to or cross through high-priority avian habitat or where risk of avian collisions are elevated would minimize the risk of avian collision.

Table Note: [1]These three columns refer to the phase and/or phases of the B2H Project during which selective mitigation measures are relevant (i.e., during design and engineering, construction, and/or operation and maintenance).

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Additionally, mitigation to offset or compensate for 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 agency's multiple-use mission. Reasonably foreseeable residual effects on resources that are expected to remain after the application of mitigation measures that meet the following criteria warrant compensatory mitigation:

- Residual effects that, if compensatory mitigation were not required, would inhibit achieving compliance with laws, regulations, and/or policies.
- Residual effects that, if compensatory mitigation were not required, would inhibit achieving land-use plans objectives.
- Residual effects on important, scarce, or sensitive resources that have been previously identified in a mitigation strategy as warranting compensatory mitigation.
- Residual effects to important, scarce, or sensitive resources that are identified through a NEPA process as warranting compensatory mitigation.

The sequence of mitigation action would comply with the mitigation identified by the CEQ (40 CFR 1508.20) and BLM's Draft Manual Section-1794 – Regional Mitigation (interim policy) and could include measures for the BLM to consider for compensating for an impact by replacing or providing substitute resources or environments. Examples include creation or restoration of wetlands; offsite vegetation treatments to improve sage-grouse or migratory bird habitat; purchase of property or conservation easements to provide long-term protection for sage-grouse or migratory bird habitats; or appropriate mitigation for impacts on designated National Scenic and/or Historic Trails or those trails recommended as suitable for congressional designation. Appendix C contains a Mitigation Framework. The Mitigation Framework (hereafter Framework) is intended to be a framework, not a site-specific mitigation plan, to discuss how the mitigation hierarchy, including compensatory mitigation, is applied to the direct and indirect impacts of the project. The Framework will (1) describe how avoidance and minimization would eliminate and/or reduce impacts; (2) identify remaining (i.e., residual) impacts to be addressed through compensatory mitigation; and (3) establish the process to assess the compensatory mitigation obligation to achieve a no net loss, or as required or appropriate, a net benefit to resources. Upon identification of the selected route in the Record of Decision and following final engineering and design, the Mitigation Framework will be used to prepare a final Compensatory Mitigation Plan. The Compensatory Mitigation Plan will be prepared using the mitigation framework as a guide for assessing the direct and indirect impacts based on an engineered and designed alignment, and identify a suite of site-specific compensatory mitigation options for selection and implementation under the review and guidance of the cooperating agencies. The goal of the Compensatory Mitigation Plan will be to provide a net benefit to sage-grouse habitat and for other resources, a no net loss and where required or appropriate, a net benefit. Cooperating agencies will review to establish consistency with the guidance and standards and principles for their particular agency and a recommendation will be made to the Authorized Officer for approval prior to any issuance of notices to proceed for the long-term right-of-way grant.

This approach is consistent with the Presidential Memorandum: Mitigating Impacts on Natural Resources from Development and Encouraging Related Private Investment (November 3, 2015); Secretarial Order No. 3330, Improving Mitigation Policies and Practices of the Department of the Interior; the BLM's obligations under the FLPMA, NEPA, Mineral Leasing Act of 1920, as amended, CEQ Regulations; and the USDI Manual 600 DM 6: Landscape Scale Mitigation Policy and WO IM2013-142: Draft MS-1794 – Regional Mitigation.

In addition to any compensatory mitigation required by the BLM, the Applicant may be required to provide compensatory mitigation for (1) effects on fish and wildlife habitat in accordance with the Energy Facility Siting Council Fish and Wildlife Habitat standard (OAR 345-022-0060), which incorporates the Oregon Department of Fish and Wildlife (ODFW) Habitat Mitigation Policy (OAR 635-415-0025), (2) effects on forested habitat on the Wallowa-Whitman National Forest, (3) effects on species listed under the ESA included as terms and conditions of the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the U.S. Fish and Wildlife Service (USFWS) Biological Opinions, and (4) effects on wetlands, streams, and other aquatic resources regulated by the Clean Water Act Section 404 permitting process and other U.S. Army Corp of Engineer (USACE) permits. The requirements of these agencies are described in Appendix C.

Residual Impacts

Residual impacts are the environmental effects that remain after selective mitigation measures are applied. After the locations of potential residual impacts were identified, the intensities of such potential residual impacts anticipated to occur from construction along the reference centerline of the alternative routes were assessed and mapped (Volume II). They are discussed in the Environmental Consequences sections for each resource in Chapter 3.

The description of residual effects anticipated for each alternative route should be reviewed in conjunction with the resource inventory maps provided in Volume II. Several of the alternative routes considered in this EIS share common links and would result in similar environmental effects. Rather than repeating information, in most cases the descriptions of alternative routes have been abbreviated, as appropriate, to focus on the effects unique to an alternative route.

Screening and Comparing Alternatives

Through a systematic analysis, as shown in Figure 2-21, the alternative routes were screened and compared to narrow the number of alternative routes and to determine the most environmentally acceptable routes to be addressed in the EIS.

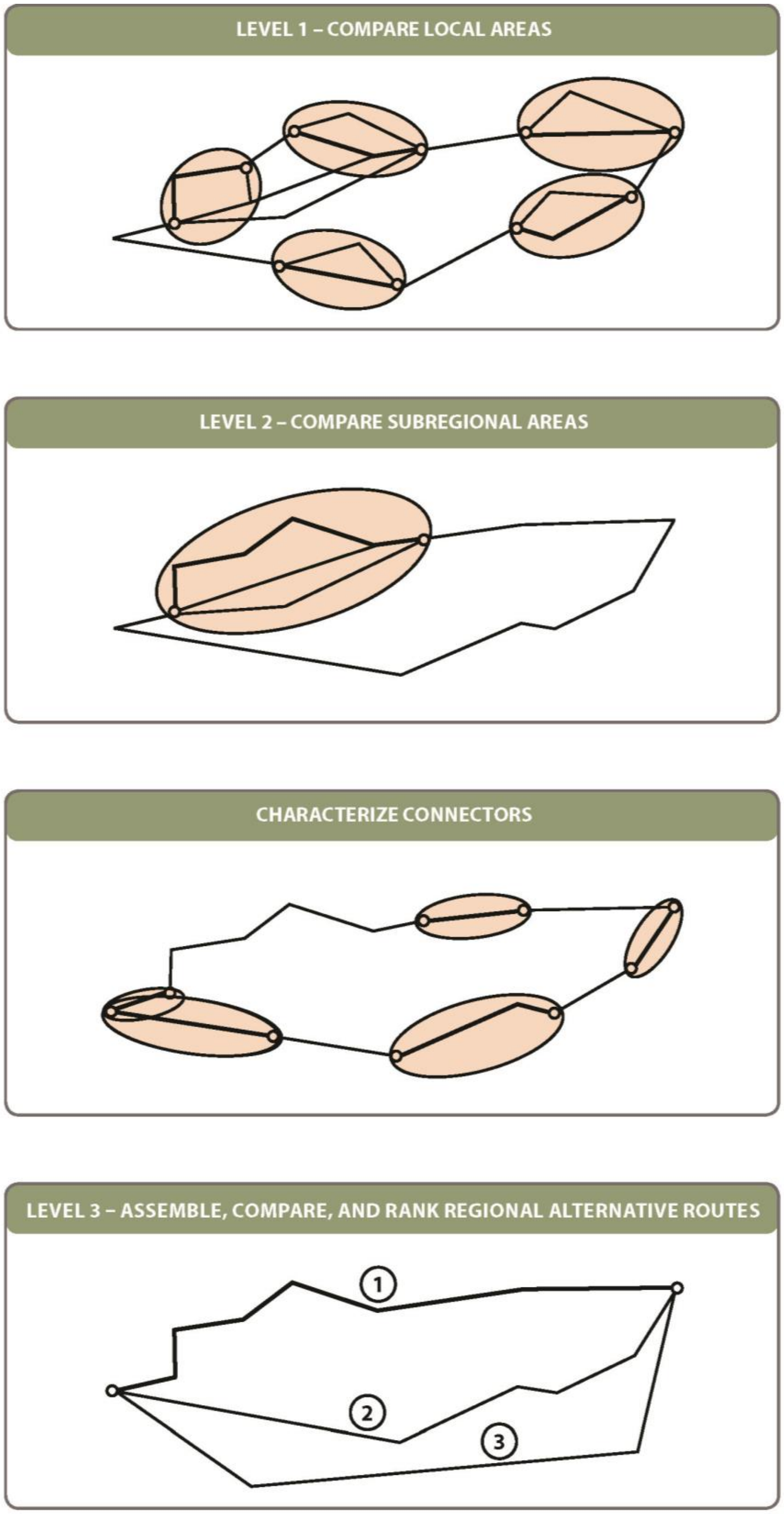

Figure 2-21. Alternative Routes Screening and Comparison Approach

Once the impacts along each of the alternative routes had been analyzed, the alternative routes were screened to characterize the impacts and compared to identify which were most environmentally preferable (in accordance with criteria at 40 CFR 1502.14). Screening and comparing the routes was conducted progressively in three levels, as illustrated in Figure 2-21, for all of the alternative routes. Level 1 screening focused on comparison of route variations in localized areas. Level 2 screening focused on larger subregional areas. Level 3 screening involved combining the suitable segments of routes from the first two levels of screening to form complete routes in each segment.

The results of the screening and comparison establish the basis for characterizing the impacts of remaining, complete alternative routes and comparing those alternative routes. The results of the comparison of alternative routes are presented in Section 2.6.

2.5.2 Transmission Line Alternative Routes

The B2H Project area is organized into the same six segments broadly described in the Draft EIS and are based generally on similar geography, natural features, drainages, resources, and/or land uses. The B2H Project segments, from north to south, are as follows:

- Segment 1—Morrow-Umatilla
- Segment 2—Blue Mountains
- Segment 3—Baker Valley
- Segment 4—Brogan
- Segment 5—Malheur
- Segment 6—Treasure Valley

There are multiple alternative routes in each segment. Each segment begins and ends where the alternative routes meet and intersect at a common point, or segment node. This section provides a description of each alternative route, and localized variations, if applicable, in each of the six segments. The alternative routes analyzed for the Final EIS include the alternative routes analyzed in the Draft EIS and the route variations resulting (1) from colocating the alignment of the proposed transmission line closer to existing transmission lines and (2) from recommendations received in comments on the Draft EIS. The BLM took a hard look at the route variations and determined the route variations are all within the B2H Project area and, additionally, the route variations incorporated into the network of alternative routes are within the spectrum of alternatives already analyzed; therefore, the EIS does not require supplementation.

Map 2-6 shows the six segments. Maps 2-7a through 2-7f show the alternative routes and route variations in each segment. Table 2-14 is a list of the alternative routes and variations and discloses the approximate disturbance anticipated along each alternative route and route variation. Then each alternative route is described and is accompanied by a small diagram showing the alignment of that alternative route.

NOTE: The term "Proposed Action" refers to Idaho Power Company's proposal to construct, operate, and maintain a 500-kV transmission line from the area of Boardman, Oregon, to the area of Hemingway, Idaho. The term "Applicant's Proposed Action Alternative" is the Applicant's preferred route.

Table 2-14. Alternative Routes and Variations by Segment

Alternative Route	Link(s)	Length (Miles[1])
Segment 1 – Morrow-Umatilla		
Applicant's Proposed Action (modified to Longhorn Substation and West of Bombing Range Road)	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
Variation S1-B1	*1-77*	*6.4*
Variation S1-B2	*1-73, 1-75*	*6.4*
East of Bombing Range Road	1-1, 1-3, 1-11, 1-25, 1-33, 1-41, 1-43, 1-45, 1-51, 1-53, 1-59, 1-60, 1-61, 1-50,1-63, 1-65, 1-71,1-77	92.3
Applicant's Proposed Action – Southern Route	1-1, 1-3, 1-7, 1-27, 1-35, 1-43, 1-45, 1-51, 1-53, 1-59, 1-60, 1-79,1-83, 1-66, 1-65, 1-71, 1-77	99.1
West of Bombing Range Road – Southern Route	1-1, 1-3, 1-7, 1-27, 1-35, 1-36, 1-38, 1-62, 1-64, 1-66, 1-65, 1-71, 1-77	95.6
Longhorn	1-5, 1-9, 1-15, 1-45, 1-51, 1-53, 1-59, 1-60, 1-61, 1-50, 1-63, 1-65, 1-71, 1-77	88.2
Interstate 84	1-5, 1-9, 1-19, 1-23, 1-31, 1-39, 1-49, 1-50, 1-63, 1-65, 1-71, 1-77	84.7
Variation S1-A1 (230-kV)	*1-31*	*18.5*
Variation S1-A2 (230-kV)	*1-37*	*18.5*
Interstate 84 – Southern Route	1-5, 1-9, 1-19, 1-23, 1-31, 1-39, 1-49, 1-50, 1-81, 1-83, 1-66, 1-65, 1-71, 1-77	93.4
Segment 2 – Blue Mountains		
Applicant's Proposed Action	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
Variation S2-A1	*2-1, 2-5*	*2.8*
Variation S2-A2	*2-3, 2-7*	*2.9*
Variation S2-B1	*2-30, 2-35*	*3.7*
Variation S2-B2	*2-25*	*3.8*
Variation S2-C1	*2-45, 2-47, 2-50*	*9.3*
Variation S2-C2	*2-48*	*8.8*
Variation S2-E1	*2-60*	*2.3*
Variation S2-E2	*2-55, 2-65*	*2.6*
Variation S2-F1	*2-75, 2-85, 2-95*	*12.1*
Variation S2-F2	*2-70, 2-80, 2-90*	*12.2*

Table 2-14. Alternative Routes and Variations by Segment		
Alternative Route	**Link(s)**	**Length (Miles[1])**
Glass Hill	2-1, 2-5, 2-15, 2-20, 2-30, 2-40, 2-42, 2-47, 2-50, 2-52, 2-60, 2-75, 2-85, 2-95	33.7
Variation S2-D1 (Glass Hill)	*2-42, 2-47*	*4.3*
Variation S2-D2 (Glass Hill)	*2-46*	*4.1*
Mill Creek	2-3, 2-7, 2-10, 2-12, 2-63, 2-65, 2-70, 2-80, 2-90	34.0
Segment 3 – Baker Valley		
Applicant's Proposed Action	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
Variation S3-A1	*3-4, 3-22*	*12.4*
Variation S3-A2	*3-10, 3-12, 3-14, 3-20*	*12.2*
Variation S3-B1	*3-26, 3-28*	*13.9*
Variation S3-B2	*3-24, 3-31, 3-37, 3-41, 3-46, 3-47, 3-48*	*14.4*
Variation S3-B3	*3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48*	*14.7*
Variation S3-B4	*3-24, 3-31, 3-32, 3-36, 3-38, 3-39, 3-43, 3-44, 3-48*	*14.3*
Variation S3-B5	*3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48*	*14.0*
Variation S3-C1	*3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92*	*21.1*
Variation S3-C2	*3-56, 3-42, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92*	*21.7*
Variation S3-C3	*3-56, 3-60, 3-62, 3-64, 3-72, 3-76, 3-88, 3-92*	*21.1*
Variation S3-C4	*3-56, 3-60, 3-62, 3-68, 3-70, 3-72, 3-76, 3-88, 3-92*	*21.4*
Variation S3-C5	*3-56, 3-60, 3-62, 3-66, 3-71, 3-73, 3-94*	*21.0*
Variation S3-C6	*3-56, 3-60, 3-74, 3-90, 3-94*	*24.7*
Flagstaff A	3-4, 3-22, 3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48, 3-52, 3-54, 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92	55.3
Timber Canyon	3-1, 3-2, 3-6, 3-8, 3-80, 3-82, 3-86, 3-88, 3-92	70.3
Flagstaff A – Burnt River Mountain	3-10, 3-12, 3-14, 3-20, 3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48, 3-52, 3-54, 3-56, 3-60, 3-62, 3-64, 3-72, 3-76, 3-88, 3-92	55.3
Flagstaff B	3-4, 3-22, 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48, 3-52, 3-54, 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92	56.0
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
Flagstaff B – Durkee	3-4, 3-22, 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48, 3-52, 3-54, 3-56, 3-60, 3-74, 3-90, 3-94	59.6
Segment 4 – Brogan		
Applicant's Proposed Action	4-1, 4-10, 4-11, 4-13, 4-25, 4-45, 4-50, 4-65, 4-70	40.1
Variation S4-A1	*4-1, 4-10, 4-11, 4-13*	*5.9*
Variation S4-A2	*4-1, 4-5, 4-15, 4-17*	*6.0*

Table 2-14. Alternative Routes and Variations by Segment		
Alternative Route	**Link(s)**	**Length (Miles[1])**
Variation S4-A3	*4-3, 4-11, 4-12, 4-17*	*6.1*
Tub Mountain South	4-1, 4-5, 4-15, 4-17, 4-20, 4-30, 4-75	40.5
Willow Creek	4-1, 4-10, 4-11, 4-13, 4-25, 4-35, 4-40, 4-60, 4-70	34.6
Segment 5 – Malheur		
Applicant's Proposed Action	5-1, 5-5, 5-10, 5-15, 5-40, 5-50, 5-55, 5-65, 5-70, 5-75	40.4
Variation S5-A1	*5-15*	*7.4*
Variation S5-A2	*5-20*	*7.4*
Variation S5-B1 (Owyhee River Crossing)	*5-50, 5-55, 5-65*	*2.5*
Variation S5-B2 (Owyhee River Crossing)	*5-45*	*2.8*
Malheur S	5-1, 5-5, 5-25, 5-30, 5-75	43.5
Malheur A	5-1, 5-5, 5-25, 5-35	43.1
Segment 6 – Treasure Valley		
Applicant's Proposed Action	6-1, 6-10, 6-20, 6-25, 6-35	28.0
Variation S6-A1	*6-10, 6-20*	*9.3*
Variation S6-A2	*6-5, 6-15*	*8.9*
Variation S6-B1	*6-25*	*14.4*
Variation S6-B2	*6-30*	*14.1*
Table Note: [1]Mileage calculations are approximate.		

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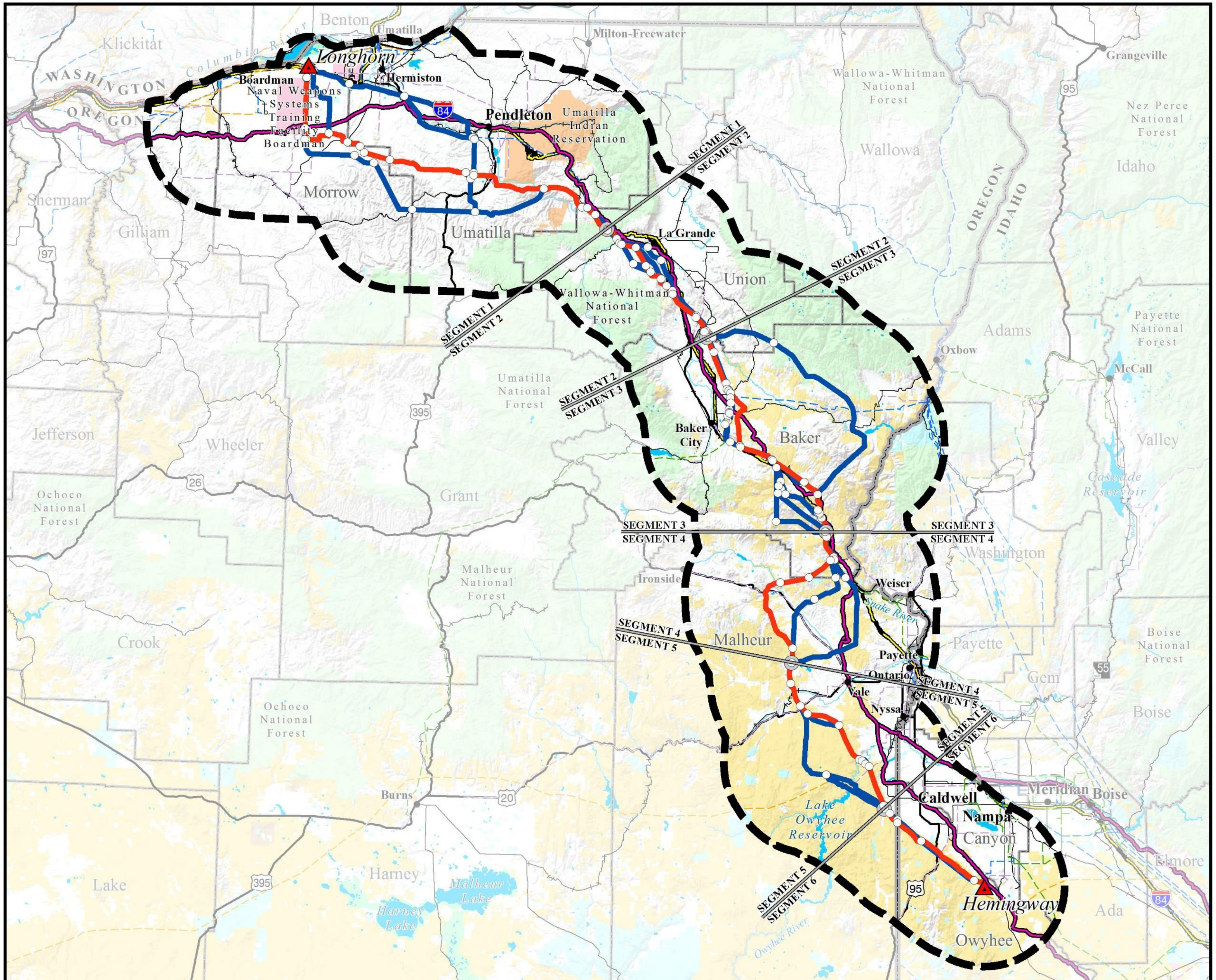

Map 2-6

Segments

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Project Features

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

Land Ownership

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

General Reference

- City or Town
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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
1:1,393,920 or 1 inch = 22 miles

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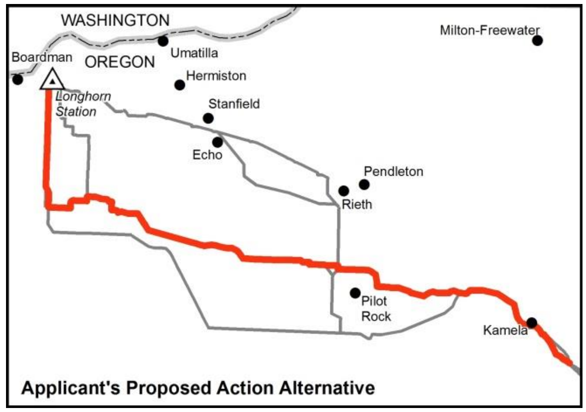
2.5.2.1 Segment 1—Morrow-Umatilla

Segment 1 begins at the planned Longhorn Substation in Morrow County and ends west of La Grande in Union County on the Wallowa-Whitman National Forest. The seven alternative routes and two areas of local variations in Segment 1 are shown in Map 2-7a.

Applicant's Proposed Action Alternative [Links 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 miles]



Comments on the Draft EIS from the Applicant indicated a change in the Applicant's Proposed Action from using the Grassland or Horn Butte Substation to using the proposed Longhorn Substation. The Longhorn Substation was addressed in the Draft EIS; however, the Applicant Proposed Action Alternative route now exits the Longhorn Substation and heads south on the west side of Bombing Range Road to a point where the route variation turns to the east and then continues along the Applicant's Proposed Action Alternative described in the Draft EIS.

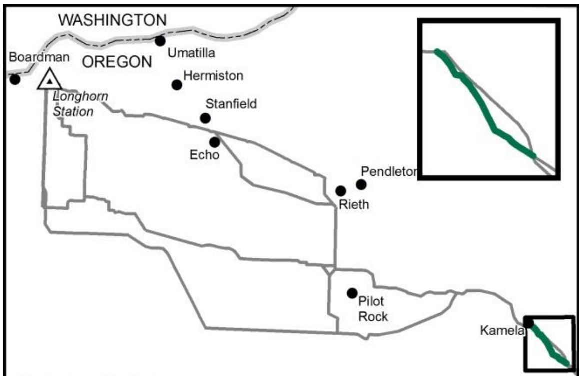
The Applicant's Proposed Action Alternative in Segment 1 exits the planned Longhorn Substation to the south, crossing the intersection of Interstate 84 and U.S. Highway 730, where the transmission line would then cross to the west side of Bombing Range Road. The alternative continues along the west side of Bombing Range Road for approximately 12 miles, within a 90-foot-wide use area, currently occupied by a 69-kV transmission line owned by BPA, on the NWSTF Boardman, before crossing the road and turning to the east traversing areas of irrigated and dryland agriculture for approximately 40 miles north of Butter Creek and Jack Canyon. The transmission line would cross U.S. Highway 395 between the community of Pilot Rock and the McKay Creek National Wildlife Refuge before ascending the Blue Mountains, south of the Umatilla Indian Reservation, across McKay Creek and onto the Wallowa-Whitman National Forest. This alternative does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and the Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

This alternative (as well as the Applicant's Proposed Action – Southern Route Alternative and West of Bombing Range Road – Southern Route Alternative) would be designed using two tower types. From Longhorn Substation for about 3.0 miles, the transmission line structures typically would be 170-feet tall self-supported steel lattice with typical spans of approximately 1,500 feet between structures. From that point to the south, where the transmission line would be adjacent to the NWSTF Boardman, structures would be no taller than 100 feet tubular steel H-frame with typical spans of 400 to 600 feet between structures. Where the transmission line would no longer be adjacent to the NWSTF Boardman, the structure type would revert to 170-foot tall self-supported steel lattice.

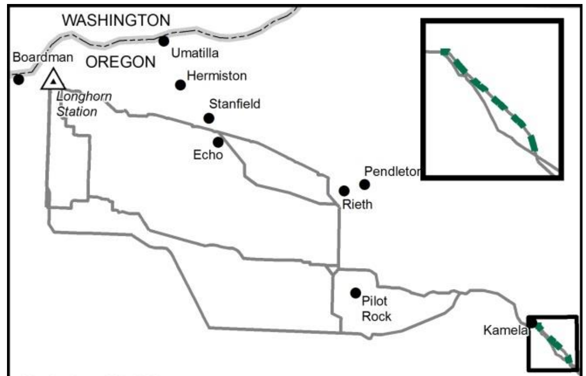
VARIATION S1 AREA B (KAMELA, WALLOWA-WHITMAN NATIONAL FOREST AREA)

Variation S1-B1 (Link 1-77; 6.4 miles) shares the same alignment as all of the alternative routes in Segment 1 located between Interstate 84 and Blue Mountain Forest State Scenic Corridor in Railroad Canyon. This variation does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice.

Variation S1-B2 (Links 1-73; 1-75, 6.4 miles) separates from the Segment 1 alternatives, south of Kamela, to parallel the existing 230-kV transmission line crossing Interstate 84 twice before rejoining the Segment 1 alternatives south of the interstate.

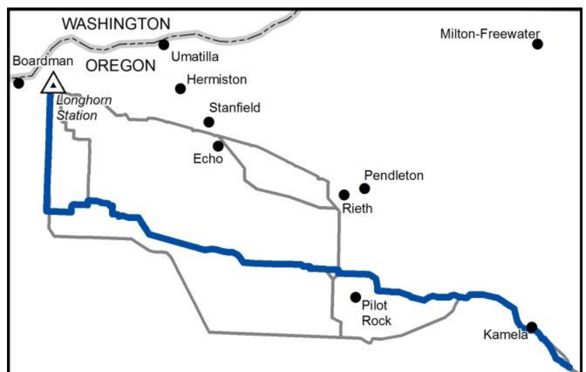


Variation S1-B1



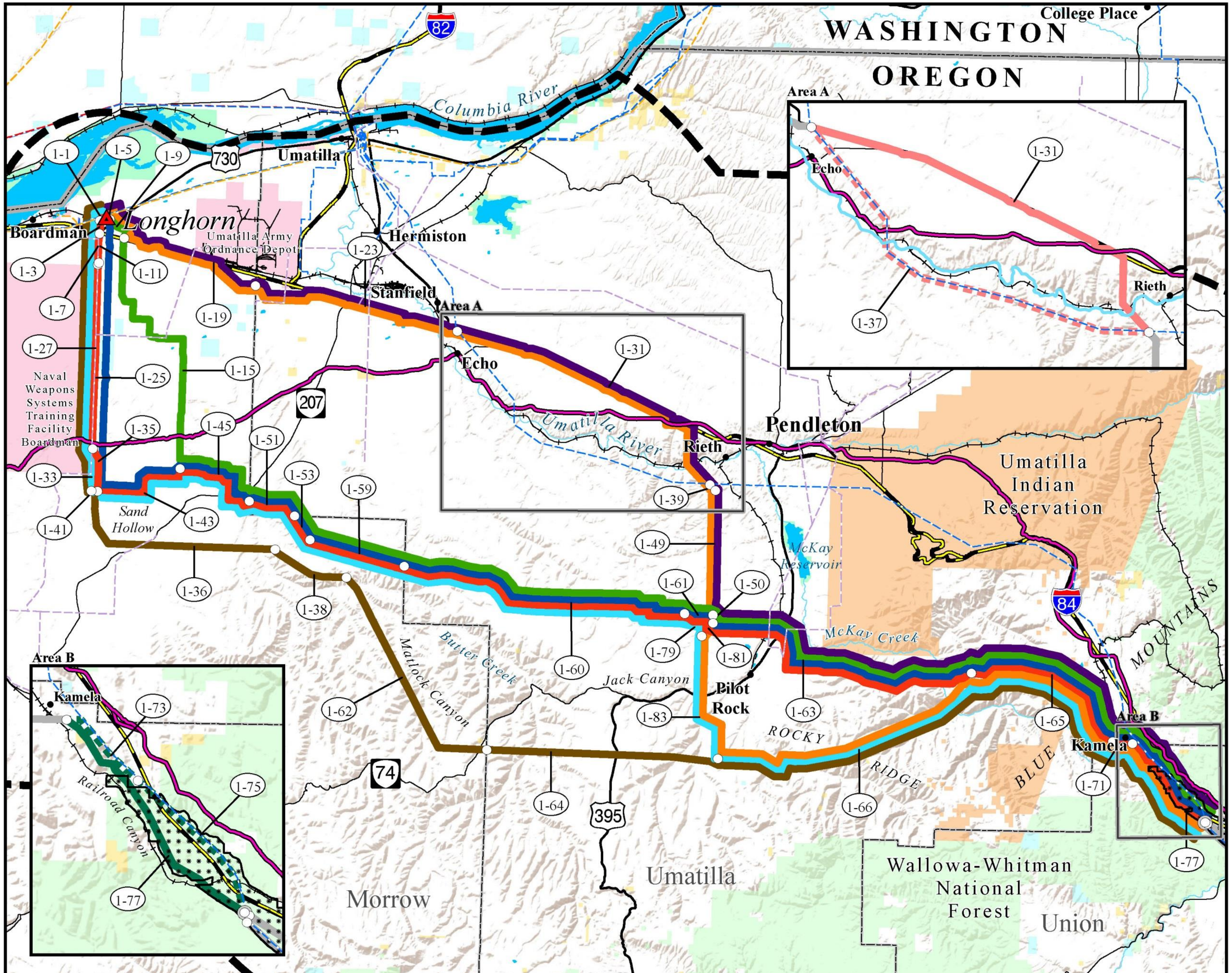
Variation S1-B2

EAST OF BOMBING RANGE ROAD ALTERNATIVE (LONGHORN VARIATION IN DRAFT EIS) [LINKS 1-1, 1-3, 1-11, 1-25, 1-33, 1-41, 1-43, 1-45, 1-51, 1-53, 1-59, 1-60, 1-61, 1-50,1-63, 1-65, 1-71,1-77; 92.3 MILES]



East of Bombing Range Road Alternative

The East of Bombing Range Road Alternative was addressed in the Draft EIS as the Longhorn Variation. It differs from the Applicant's Proposed Action Alternative only in that it parallels Bombing Range Road on the east side rather than on the west side of the road. The route was developed to address concerns (1) raised by the Navy regarding encroachment on military airspace in the vicinity of the NWSTF Boardman, (2) to minimize effects on tree farms and dairies in the area, and (3) to align with an existing transmission corridor.



Map 2-7a

Segment 1
Morrow-Umatilla

BOARDMAN TO HEMINGWAY
TRANSMISSION LINE PROJECT

Alternative Routes[1, 2]

- 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
- Longhorn Alternative
- Interstate 84 Alternative
- Interstate 84 - Southern Route Alternative

Variations

AREA A
- Variation S1-A1
- Variation S1-A2

AREA B
- Variation S1-B1
- Variation S1-B2

Project Features

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

Land Ownership

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

General Reference

- City or Town
- Land and Resource Management Plan Utility Corridor
- 500-kV Transmission Line
- 345-kV Transmission Line
- 230-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- State Boundary
- County Boundary
- 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.
- 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
Miles
1:375,000 or 1 inch = 6 miles

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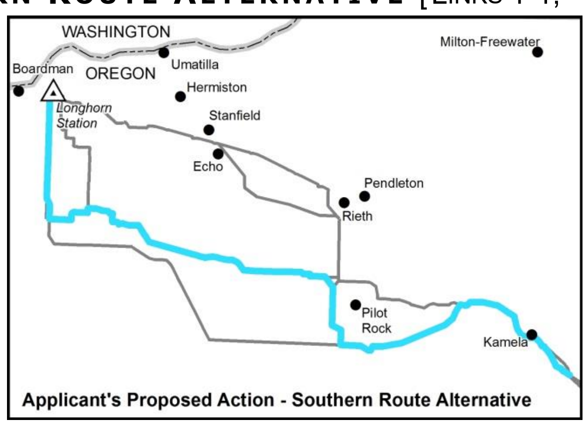
Although closer to the NWSTF Boardman property, the alternative route parallels the existing UEC 115-kV transmission line (located on the east side of Bombing Range Road) and the BPA 69-kV line (located on the west side of Bombing Range Road). The right-of-way along the northern portion of this alternative would be immediately adjacent to but would not extend over the eastern boundary of the NWSTF Boardman property.

The alternative route exits the planned Longhorn Substation to the southwest, where it immediately crosses over the Union Pacific Railroad, then turns south and crosses the intersection of Interstate 84 and U.S. Highway 730, where the transmission line would continue south along the east side of Bombing Range Road, crossing mostly private land and a parcel of state-administered land. The alternative route continues along the east side of Bombing Range Road for approximately 15 miles, along the edge of the Boardman Tree Farm and other irrigated agricultural lands, before turning to the east traversing areas of irrigated and dryland agriculture for approximately 40 miles north of Butter Creek and Jack Canyon. The transmission line would cross U.S. Highway 395 between the community of Pilot Rock and the McKay Creek National Wildlife Refuge before ascending the Blue Mountains, south of the Umatilla Indian Reservation, across McKay Creek and onto the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

The East of Bombing Range Road Alternative would be designed using two structure types. From Longhorn Substation for about 3.0 miles, the transmission line structures typically would be 170-feet tall self-supported steel lattice with typical spans of approximately 1,500 feet between structures. From that point to the south, where the transmission line would be adjacent to the NWSTF Boardman, structures would be no taller than 100 feet tubular steel H-frame with typical spans of 500 to 700 feet between structures. Where the transmission line would no longer be adjacent to the NWSTF Boardman, the structure type would revert to 170-foot tall self-supported steel lattice.

APPLICANT'S PROPOSED ACTION – SOUTHERN ROUTE ALTERNATIVE [LINKS 1-1, 1-3, 1-7, 1-27, 1-35, 1-43, 1-45, 1-51, 1-53, 1-59, 1-60, 1-79,1-83, 1-66, 1-65, 1-71, 1-77; 99.1 MILES]



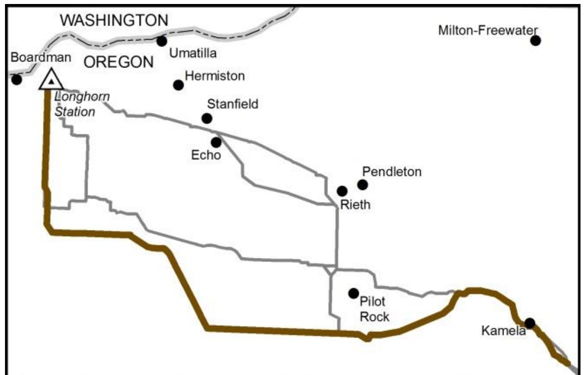
Applicant's Proposed Action - Southern Route Alternative

The Applicant's Proposed Action – Southern Route Alternative was not addressed as such in the Draft EIS and is the result of incorporating a route-variation option recommended in comments since the Draft EIS was released for public review. It is the same as the Applicant's Proposed Action through Link 1-61 where it turns south. The north-south portion that passes to the west of Pilot Rock was proposed by the DNR of the CTUIR to connect with the southern route alternative proposed by Morrow and Umatilla counties.

The alternative route exits the planned Longhorn Substation to the south, crossing the intersection of Interstate 84 and U.S. Highway 730, where the transmission line would then cross to the west side of Bombing Range Road. The alternative route continues along the west side of Bombing Range Road for approximately 12 miles, within a 90-foot-wide use area, currently occupied by the BPA 69-kV transmission line, on the NWSTF Boardman, before crossing the road and turning to the east traversing areas of irrigated and dryland agriculture for approximately 40 miles north of Butter Creek and Jack Canyon. The transmission line would then turn south crossing U.S. Highway 395 about 4 miles west of Pilot Rock and continue to the south before turning toward the east and ascending the Blue Mountains across Rocky Ridge. This alternative route crosses McKay Creek and enters the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

WEST OF BOMBING RANGE ROAD – SOUTHERN ROUTE ALTERNATIVE [LINKS 1-1, 1-3, 1-7, 1-27, 1-35, 1-36, 1-38, 1-62, 1-64, 1-66, 1-65, 1-71, 1-77; 95.6 MILES]

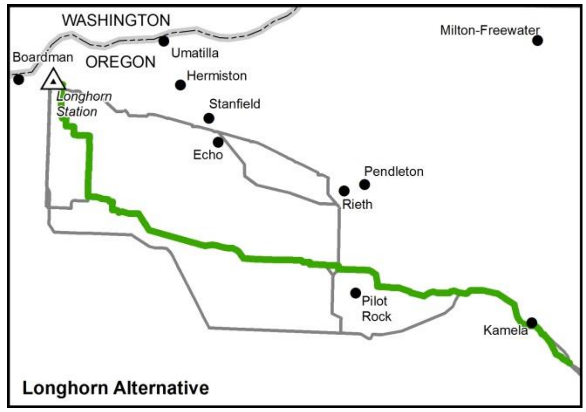
The West of Bombing Range Road to Southern Route Alternative was not addressed in the Draft EIS and is the result of a route-variation option recommended in comments since the Draft EIS was released for public review. It was proposed by Morrow and Umatilla counties to avoid agricultural areas and areas of potential windfarm development. The north-south portion of the alternative route south of the Longhorn Substation is the same alignment as the Applicant's Proposed Action Alternative and the Applicant's Proposed Action – Southern Route Alternative.



West of Bombing Range Road - Southern Route Alternative

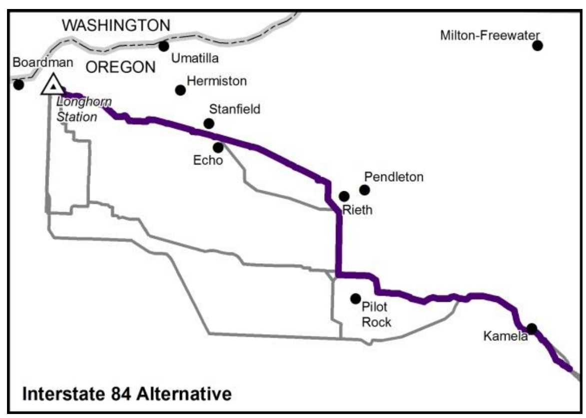
It exits the planned Longhorn Substation to the south, crossing the intersection of Interstate 84 and U.S. Highway 730, where the transmission line would then cross to the west side of Bombing Range Road. The alternative route continues along the west side of Bombing Range Road for approximately 12 miles, within a 90-foot-wide use area, currently occupied by a 69-kV transmission line owned by BPA, on the NWSTF Boardman, before crossing the road and continuing an additional 5 miles to the south. Just west of Oregon Route 207, the transmission line would turn to the east traversing an area of dryland agriculture for 15 miles before crossing Butter Creek and turning to the southeast paralleling Matlock Canyon (the Umatilla south route-variation option recommended by Morrow County [Section 2.1.1.3]). This alternative route then continues to the east for approximately 25 miles crossing U.S. Highway 395 9 miles southwest of Pilot Rock and ascending the Blue Mountains across Rocky Ridge. This alternative route crosses McKay Creek and enters the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

LONGHORN ALTERNATIVE [LINKS 1-5, 1-9, 1-15, 1-45, 1-51, 1-53, 1-59, 1-60, 1-61, 1-50, 1-63, 1-65, 1-71, 1-77; 88.2 MILES]



The Longhorn Alternative was addressed in the Draft EIS. Except for the initial north-south portion of the route Links 1-5, 1-9, 1-15, the Longhorn Alternative is the same as the Applicant's Proposed Action Alternative. The alternative route exits the planned Longhorn Substation to the east crossing U.S. Highway 730 before turning to the south across Interstate 84. This alternative route then continues to the southeast avoiding irrigated agricultural lands and the Boardman Tree Farm for approximately 8 miles, then the transmission line would turn to the south toward Sand Hollow before heading east to traverse areas of irrigated and dryland agriculture for approximately 35 miles north of Butter Creek and Jack Canyon. The transmission line would cross U.S. Highway 395 between the community of Pilot Rock and the McKay Creek National Wildlife Refuge before ascending the Blue Mountains, south of the Umatilla Indian Reservation, across McKay Creek and onto the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

INTERSTATE 84 ALTERNATIVE [LINKS 1-5, 1-9, 1-19, 1-23, 1-31, 1-39, 1-49, 1-50, 1-63, 1-65, 1-71, 1-77; 84.7 MILES]



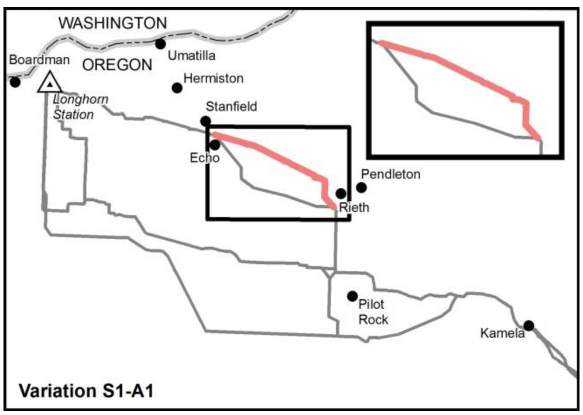
The Interstate 84 Alternative was not addressed in the Draft EIS and is the result of a route-variation option recommended in comments on the Draft EIS; comments received from Umatilla County; WildLands Defense; a letter from a consortium of the OCTA, Hells Canyon Preservation Council, Oregon Wild, and WildEarth Guardians; and several individuals. The intent was to consolidate the proposed transmission line with other linear facilities and in areas already disturbed.

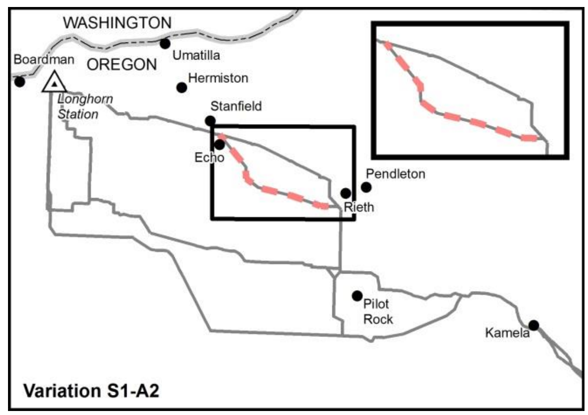
The Interstate 84 Alternative exits the planned Longhorn Substation to the east crossing U.S. Highway 730 and then parallels Interstate 84 for approximately 35 miles (except for approximately a 6-mile-long section just south of the Umatilla Ordnance Depot) to an area 6 miles west of Pendleton. The alternative route then turns to the south crossing the Umatilla River before joining the alignment of the Applicant's Proposed Action Alternative northwest of Pilot Rock. The transmission line would cross U.S. Highway 395 between the community of Pilot Rock and the McKay Creek National Wildlife Refuge before ascending the Blue Mountains, south of the Umatilla Indian Reservation, across McKay Creek and onto the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

Variation S1 Area A (Parallel 230-kV Transmission Line)

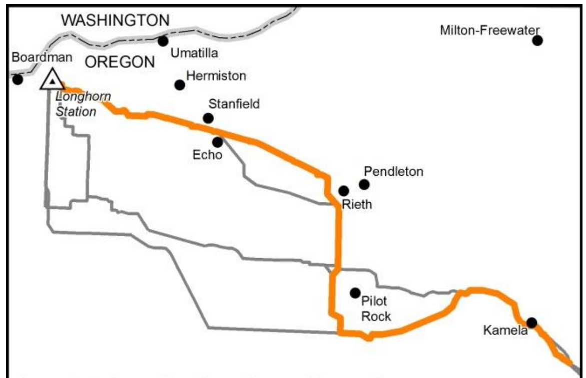
Variation S1-A1 (Link 1-31; 18.5 miles) is the same alignment as the Interstate 84 and Interstate 84 to southern route alternative, paralleling Interstate 84 to the southeast for approximately 15 miles. About 6 miles west of Pendleton, the route turns to the south crossing the Umatilla River.

Variation S1-A2 (Link 1-37; 18.5 miles) was not addressed in the Draft EIS and was developed to respond to the comments on the Draft EIS to parallel Interstate 84 and/or the exiting 230-kV transmission line. This variation separates from the Interstate 84 and Interstate 84 – Southern Route alternatives by turning southeast in an area north of the community of Echo and parallels the existing 230-kV line crossing the Umatilla River approximately 15 miles west of Pendleton. The route continues to parallel the Umatilla River, about 1 mile to the south for another 9 miles before rejoining the Interstate 84 and Interstate 84 to Southern Route alternatives.





INTERSTATE 84 – SOUTHERN ROUTE ALTERNATIVE [LINKS 1-5, 1-9, 1-19, 1-23, 1-31, 1-39, 1-49, 1-50, 1-81, 1-83, 1-66, 1-65, 1-71, 1-77; 93.4 MILES]



Interstate 84 to Southern Route Alternative

The Interstate 84 – Southern Route Alternative was not addressed in the Draft EIS and is the result of a route-variation option recommended by the CTUIR DNR. The CTUIR DNR preferred routing along the Interstate 84 where there is existing disturbance, but suggested extending the north-south portion (Link 1-49) farther south to connect with the southern route, thereby avoiding a cultural landscape in the McKay Creek area.

The Interstate 84 – Southern Route Alternative exits the planned Longhorn Substation to the east crossing U.S. Highway 730 and then parallels Interstate 84 for approximately 35 miles, except for about 6 miles south of the Umatilla Ordnance Depot, to an area 6 miles west of Pendleton. The alternative route then turns to the south crossing the Umatilla River and Jack Canyon before joining the Southern Route southwest of Pilot Rock and ascending the Blue Mountains across Rocky Ridge. This alternative route then crosses McKay Creek and enters the Wallowa-Whitman National Forest. This alternative route does not parallel the existing 230-kV transmission line, starting south of Kamela, to avoid crossing Interstate 84 twice and continues to the southeast between the interstate and Blue Mountain Forest State Scenic Corridor in Railroad Canyon.

ADDITIONAL ACTION – 69-KV LINE RELOCATION

The current alignment of the BPA 69-kV transmission line is illustrated in Figure 2-22a. The existing 69-kV line exits the BPA-owned Boardman Substation north of Interstate 84 over to and south along the west side of Bombing Range Road to the southeast corner of the NWSTF Boardman, then traverses east to west along the southern boundary of the NWSTF Boardman property for approximately 2 miles, then turns southwest and continues on private land to the existing Ione Substation to serve the Columbia Basin Electric Cooperative load.

To allow the BPA to continue electrical service to customers serviced by the 69-kV line and accommodate the Applicant's requested use of the NWSTF Boardman property, the BPA and UEC, which owns and operates a 115-kV transmission line on private land on the east side of Bombing Range Road, are coordinating to develop options potentially to relocate BPA's 69-kV line. Three options are being considered. All three options involve replacing UEC's 115-kV line with double-circuit structures to support 230-kV lines. Design Option 1 provides for partial removal of the BPA 69-kV line from the NWSTF Boardman to allow the vacated area to be repurposed for the B2H 500-kV transmission line. Design Options 2 and 3 both provide for complete removal of the BPA 69-kV transmission line from the NWSTF Boardman. A description of each design option follows.

Design Option 1(partial removal of the 69-kV line from NWSTF Boardman)

Design Option 1, illustrated in Figures 2-22b and 2-22c, reflects partial removal (12.2 miles) of the 69-kV line from the NWSTF Boardman. Design Option 1 involves building approximately 12.2 miles of new double-circuit 230-kV line. From the intersection of Wilson Lane and Bombing Range Road to Homestead Lane (approximately 3.5 miles), where the line enters the Bombing Range Substation, the UEC 115-kV transmission line would be rebuilt as a tubular steel, single-pole, double-circuit 230-kV. The west circuit would be energized initially at 69-kV by connecting it to the existing BPA 69-kV line at the intersection of Wilson Lane and Bombing Range Road. The east circuit would be energized initially at 115-kV by connecting it to the remaining existing UEC 115-kV line at the corner of Wilson Lane and Bombing Range Road. From Homestead Lane, the new double-circuit 230-kV line would extend south on the east side of Bombing Range Road on private land supporting only the west circuit (69-kV).

At the point where the proposed B2H transmission line would divert from the NWSTF Boardman property east onto private property, the 69-kV circuit would cross to the west side of Bombing Range Road and connect with the existing 69-kV H-frame line and continue on the NWSTF Boardman for approximately 3.9 miles then onto private land continuing south to the Ione Substation to serve the Columbia Basin Electric Cooperative load.

The double-circuit 230-kV structures would be no taller than 100 feet. OPGW would be installed in the shield-wire position. Spans between structures would be approximately 400 to 600 feet. The tubular steel poles would be direct buried where possible, and installed on a drilled-pier concrete foundation where required. The typical footprint would be a circle about 3 feet in diameter where direct buried. Where a foundation is used, the footprint would be approximately 8 feet in diameter. The double-circuit line is anticipated to occupy a right-of-way 55 feet wide.

Design Option 2(full removal of the 69-kV line from NWSTF Boardman)

Design Option 2, illustrated on Figures 2-22d and 2-22e, reflects full removal of the 69-kV line from the NWSTF Boardman. Of the approximately 15.6 miles of 69-kV line to be removed, most of the line is on the NWSTF Boardman, the remainder is on private land. Similar to Design Option 1, from the intersection of Wilson Lane and Bombing Range Road to Homestead Lane (approximately 3.5 miles), where the line enters the Bombing Range Substation, the UEC 115-kV transmission line would be rebuilt as a tubular steel, single-pole, double-circuit 230-kV. The lines would be energized initially at 69-kV on the west side and 115-kV on the east side.

South of Homestead Lane, the new double-circuit transmission line structures, with only the west circuit (69-kV) installed, would be constructed continuing south along the east side of the NWSTF Boardman eastern boundary on private land to and around the southeast corner of the NWSTF Boardman. The new 69-kV circuit would connect at this point to the existing 69-kV line and continue south to the Ione Substation.

The new double-circuit 230-kV line would be approximately 17.7 miles long (5.5 miles north of Homestead Lane with both circuits installed and 12.2 miles south of Homestead). The double-circuit

230-kV structures would be no taller than 100 feet above ground level where height is restricted due to operations associated with the NWSTF Boardman. OPGW would be installed in the shield-wire position. Spans between structures would be approximately 400 to 600 feet. The tubular steel poles would be direct buried where possible, and installed on a drilled-pier concrete foundation where required. The typical footprint would be a circle about 3 feet in diameter where direct buried. Where a foundation is used, the footprint would be approximately 8 feet in diameter. The double-circuit line is anticipated to occupy a right-of-way 55 feet wide.

Design Option 3(full removal of the 69-kV line from NWSTF Boardman with step-down substation)

In the event that wind-energy development precedes construction of the B2H Project, Design Option 3 assumes that the new tubular steel, single-pole double-circuit 230-kV would be constructed by others (e.g., wind-energy developers). Design Option 3, illustrated in Figures 2-22f and 2-22g, would be similar as Design Option 2 with a deviation in the south; the line would remain on the east side of Bombing Range Road. Also, south of the NWSTF Boardman, where the new double-circuit 230-kV line would cross over the 69-kV line, a new step-down substation (from 230-kV to 69-kV) would be constructed on a new site on private land (Figure 2-22g). The pad for the substation would be constructed to cover an area of approximately 410 feet by 235 feet. A standard 7-foot-high chain link fence with three-strand barbed wire on top would be constructed around the substation. A prefabricated concrete control building approximately 12 feet by 30 feet would be installed. Power to the substation would be provided by a 69-kV distribution transformer with a direct-current battery bank to provide 8 hours of backup power in the event of an outage of the 230-kV line. An approximately 0.35-mile-long existing primitive road would be upgraded to provide access to the substation.

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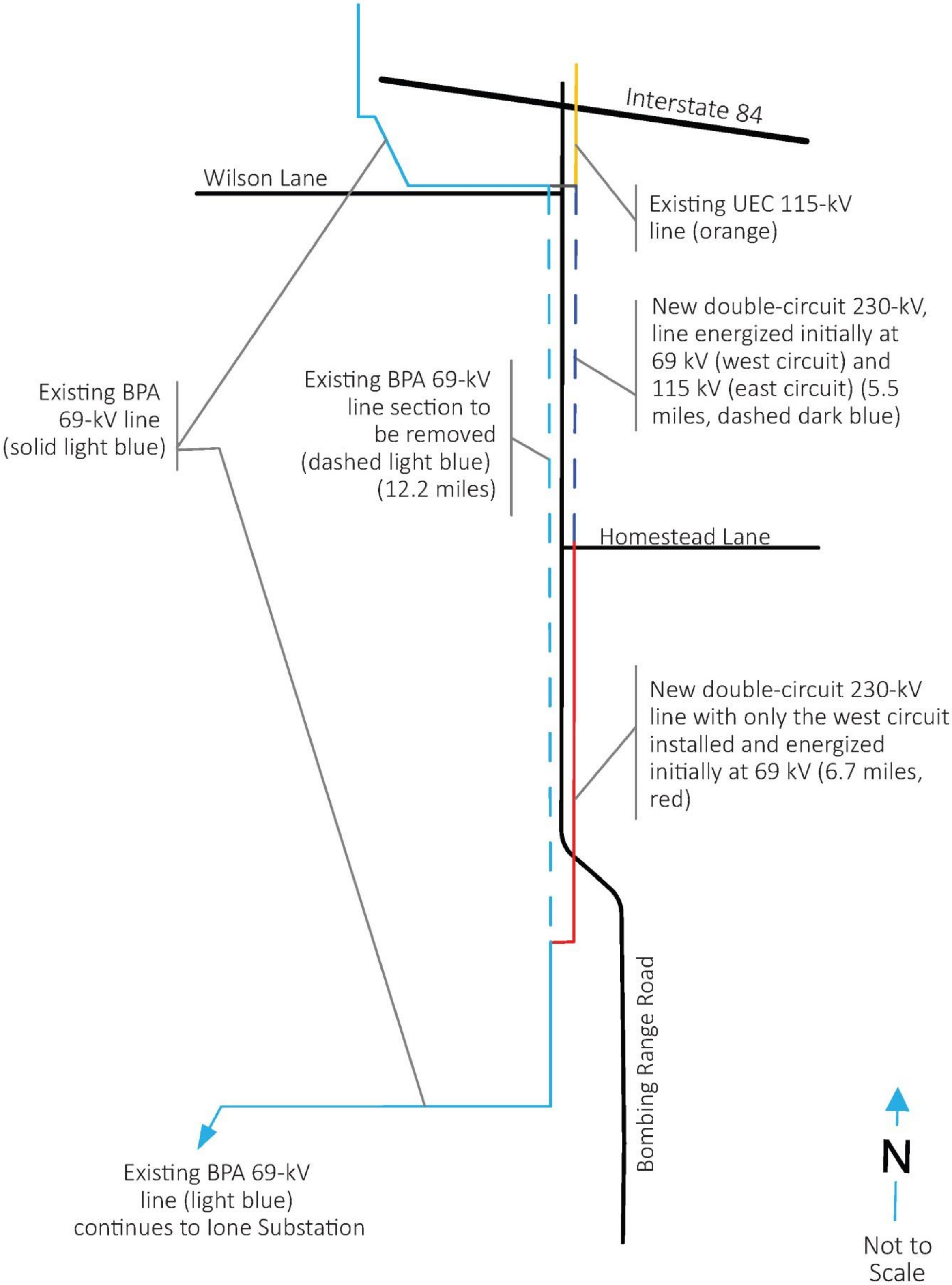


Figure 2-22b. Additional Action—Design Option 1 Removal and Rebuild

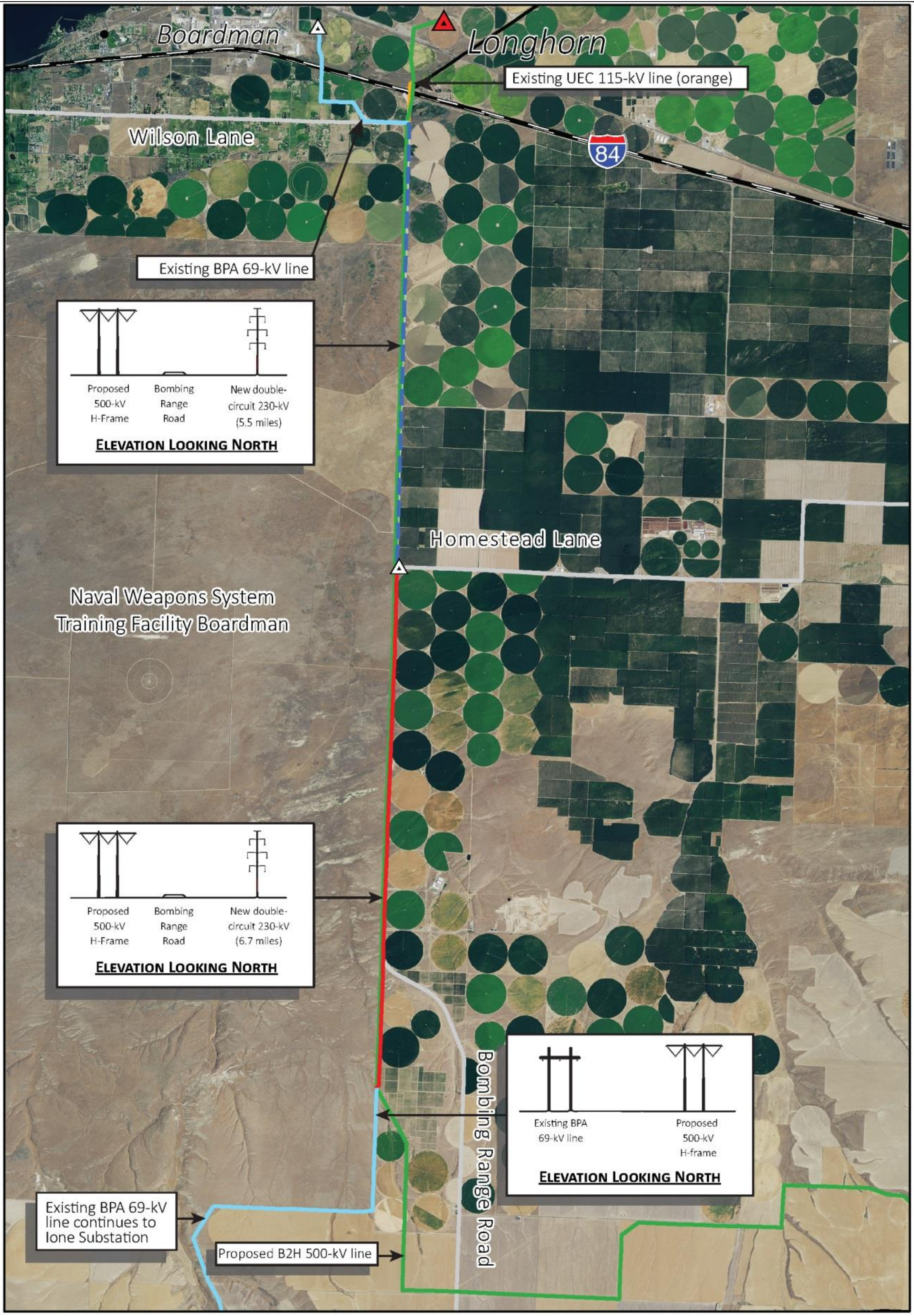


Figure 2-22c. Additional Action—Design Option 1 Proposed Configuration

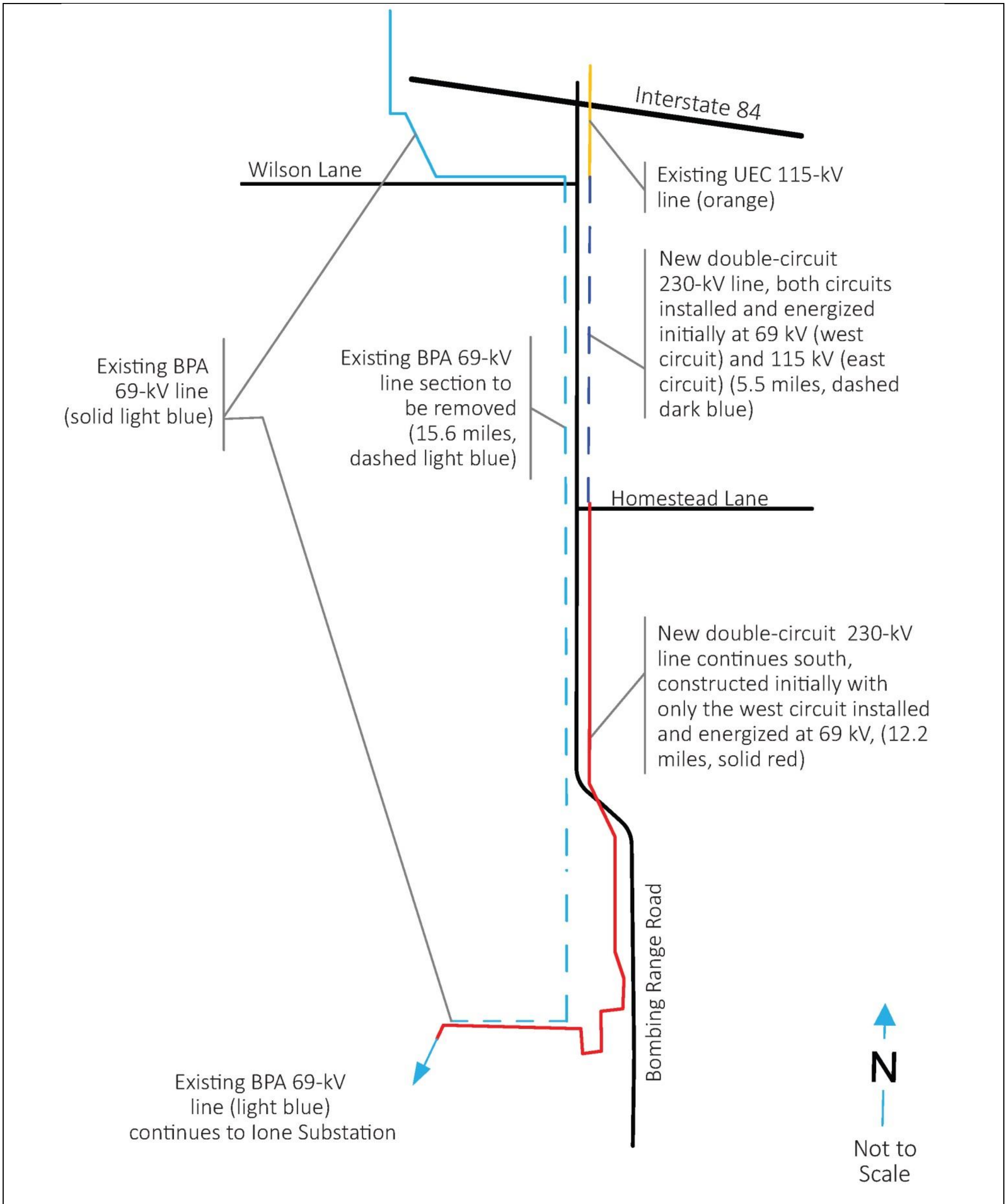


Figure 2-22d. Additional Action—Design Option 2 Removal and Rebuild

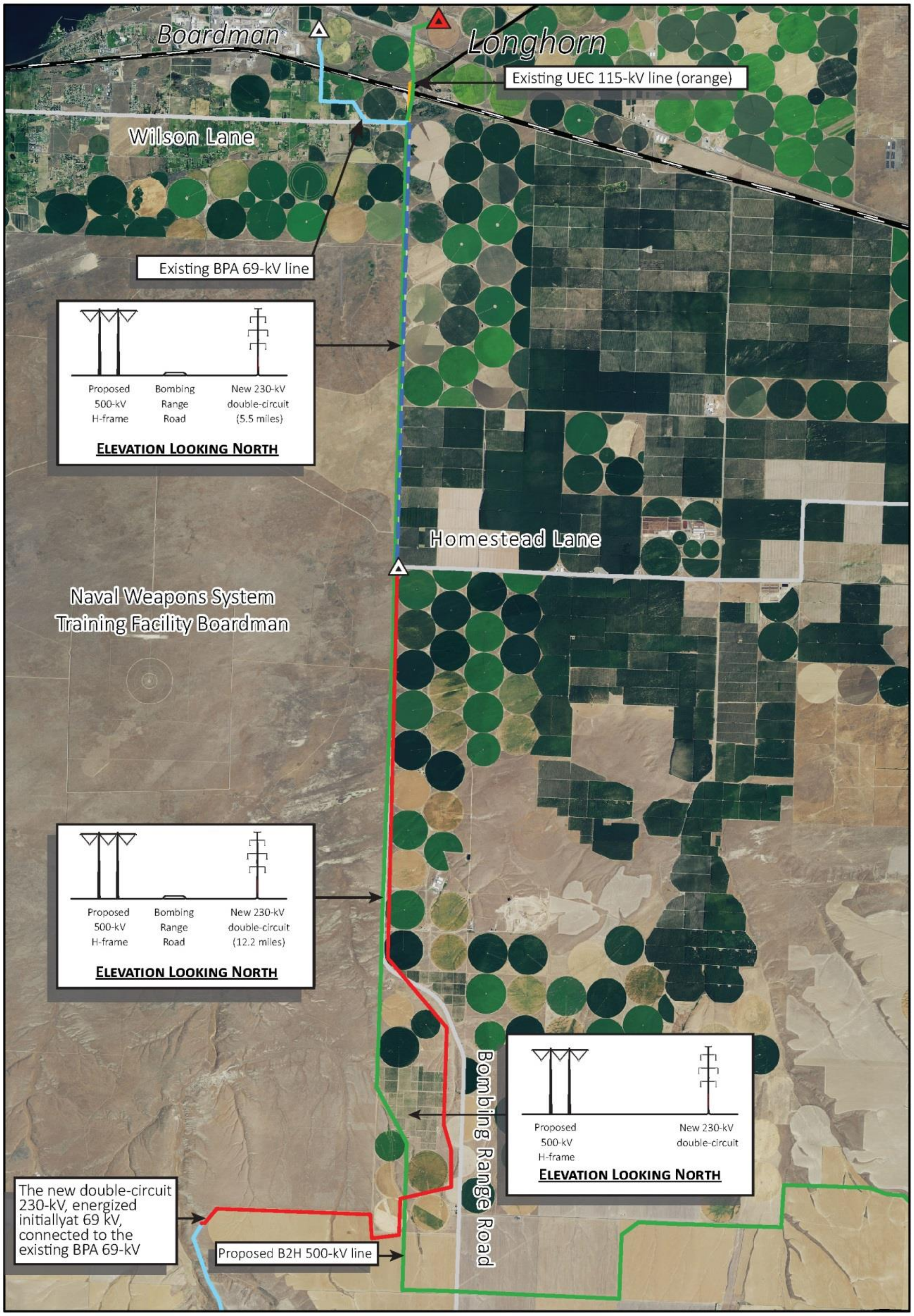


Figure 2-22e. Additional Action—Design Option 2 Proposed Configuration

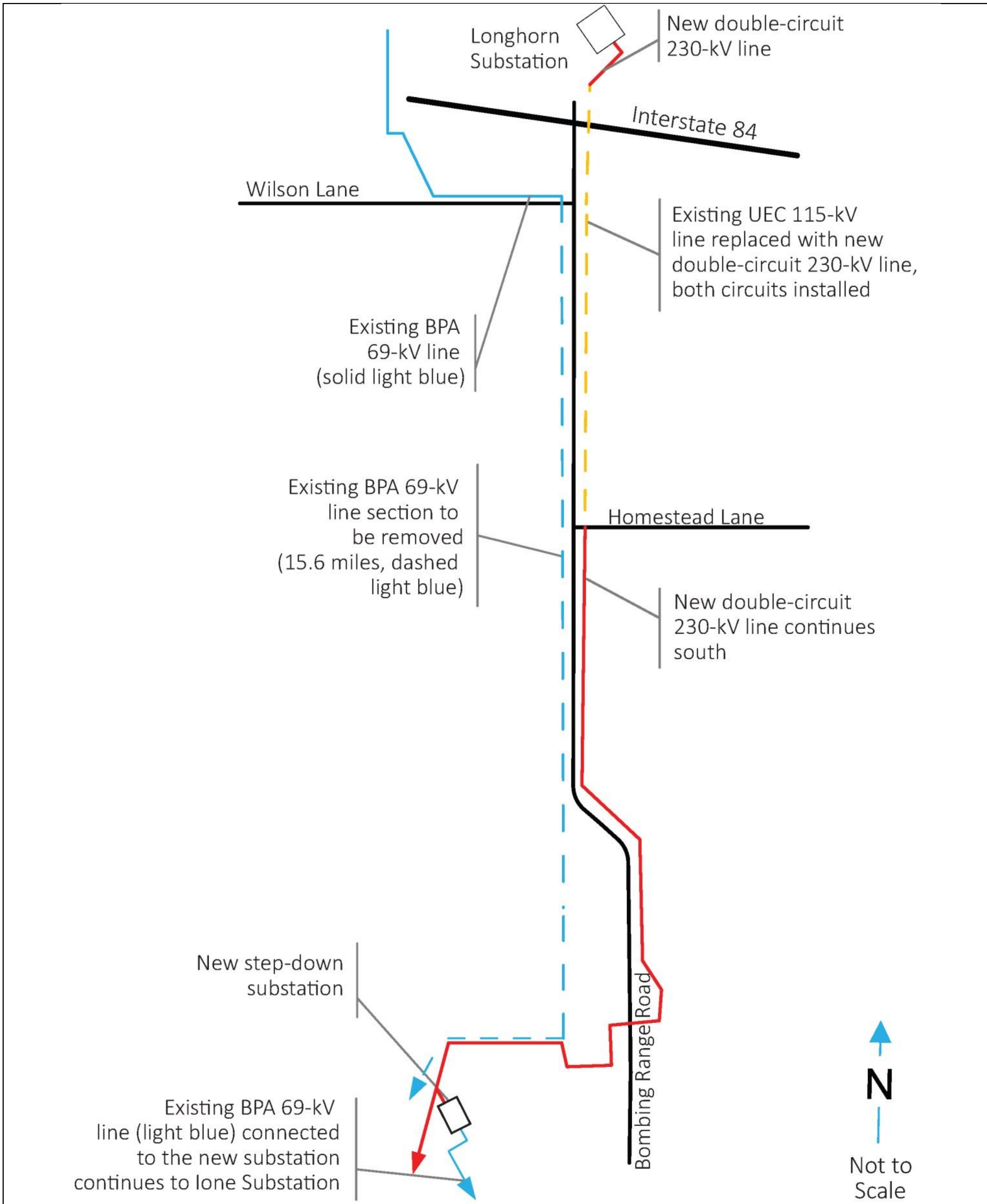


Figure 2-22f. Additional Action—Design Option 3 Removal and Rebuild

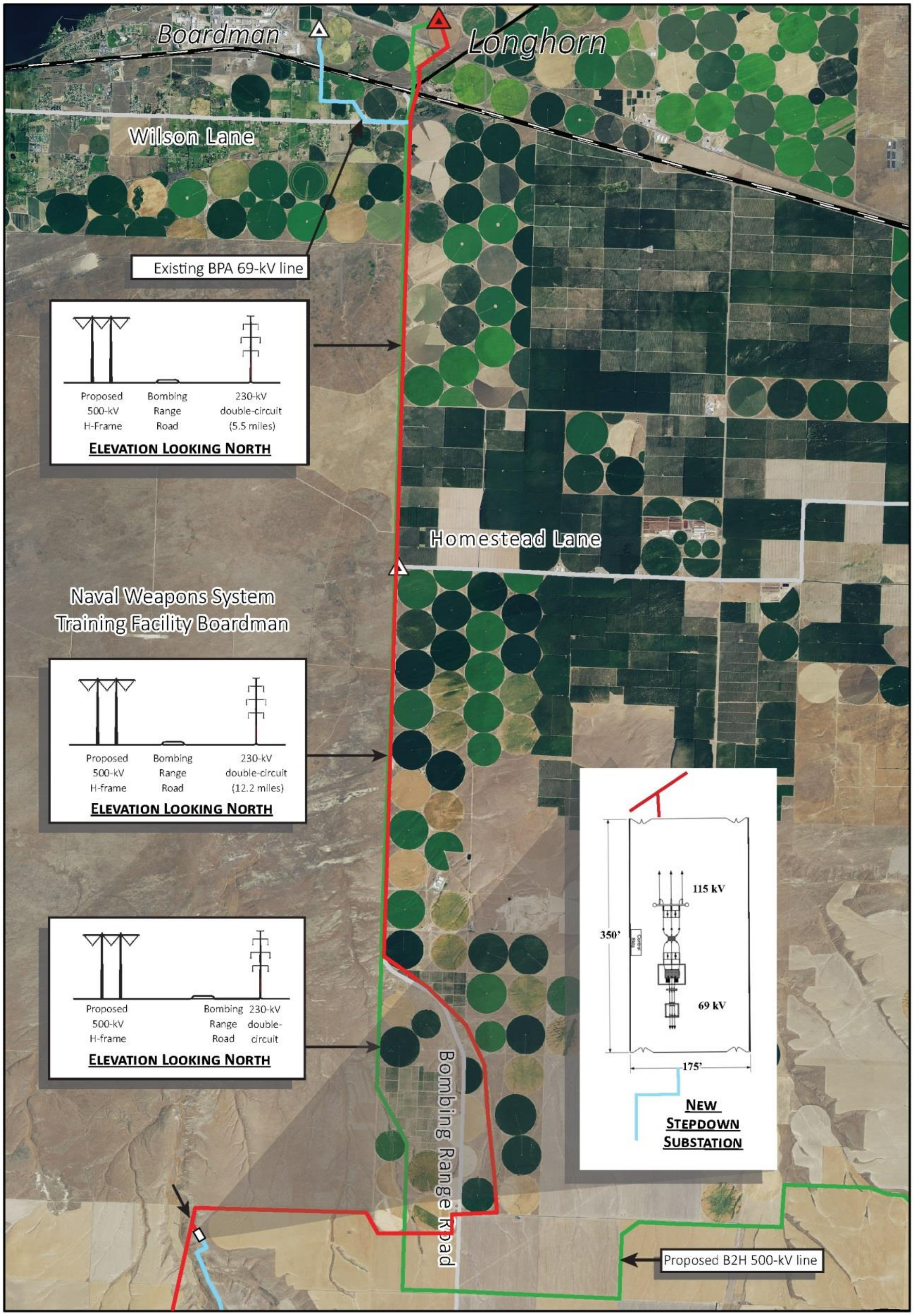


Figure 2-22g. Additional Action—Design Option 3 Proposed Configuration

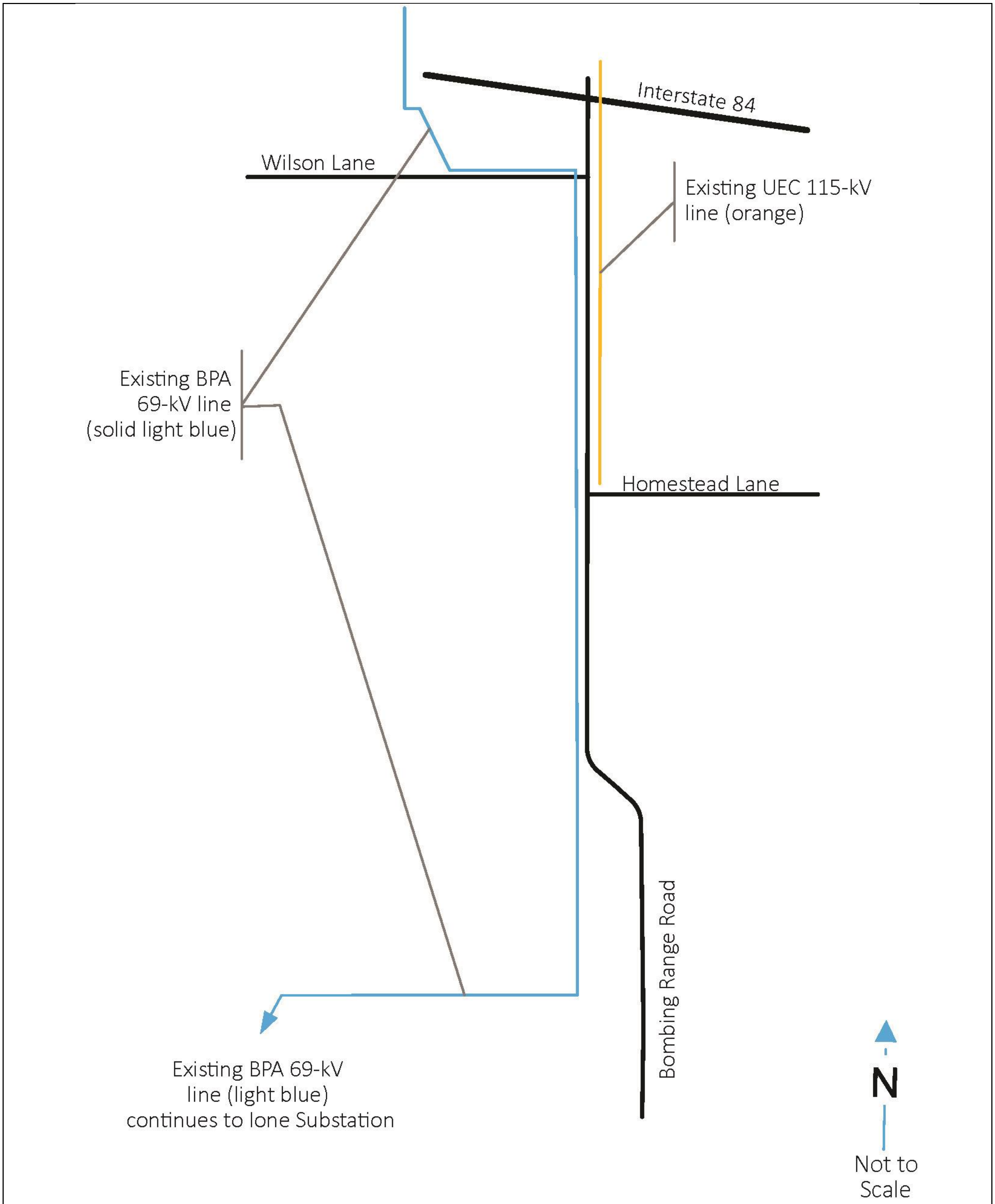
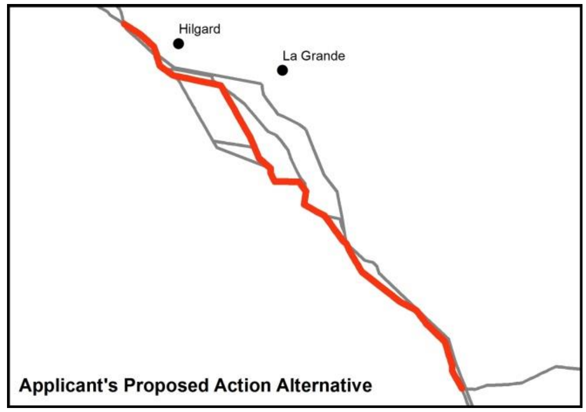


Figure 2-22a. Additional Action Existing Condition

2.5.2.2 Segment 2—Blue Mountains

Segment 2 begins at west of La Grande in Union County and ends east of North Powder in Union County. The three alternative routes and six areas of local route variations in Segment 2 are shown on Map 2-7b.

Applicant's Proposed Action Alternative [Links 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 miles]



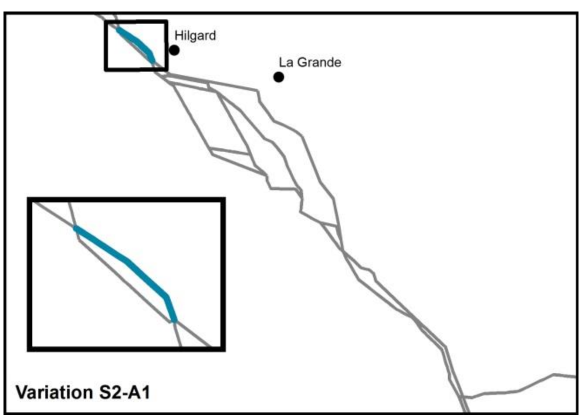
Applicant's Proposed Action Alternative

The Applicant's Proposed Action Alternative in Segment 2 was addressed in the Draft EIS and was the Agency Preferred Route in the Draft EIS. It was developed to the west of and to avoid the community of La Grande, Morgan Lake, and Ladd Marsh Wildlife Area. It continues from Segment 1 traveling to the southeast crossing Oregon Route 244, near Hilgard Junction State Park, and briefly heading east toward La Grande, for 3 miles, before again turning to the southeast. This alternative route is located 1 mile west of Morgan Lake and crosses Glass Hill and Ladd Creek as the route continues to the southeast for 15 miles before crossing Interstate 84 approximately 15 miles south of La Grande. Continuing to the southeast, the Applicant's Proposed Action Alternative crosses Powder River to the end of Segment 2 on Riverdale Hill.

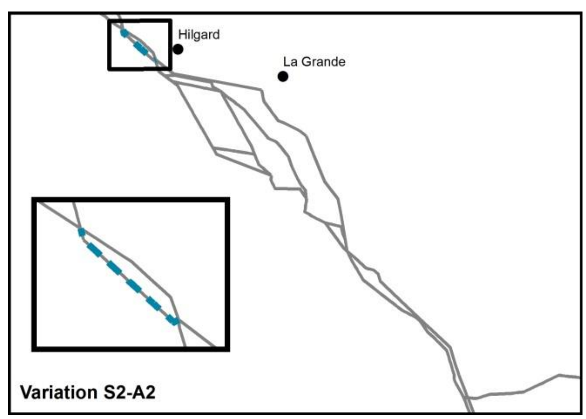
Variation S2 Area A (Wallowa-Whitman National Forest)

Variation S2-A1 (Links 2-1, 2-5; 2.8 miles) shares the same alignment as all of the alternatives in Segment 2, located 0.5 mile southeast of Interstate 84, paralleling the interstate for 3 miles to an area west of the Hilgard Junction State Park.

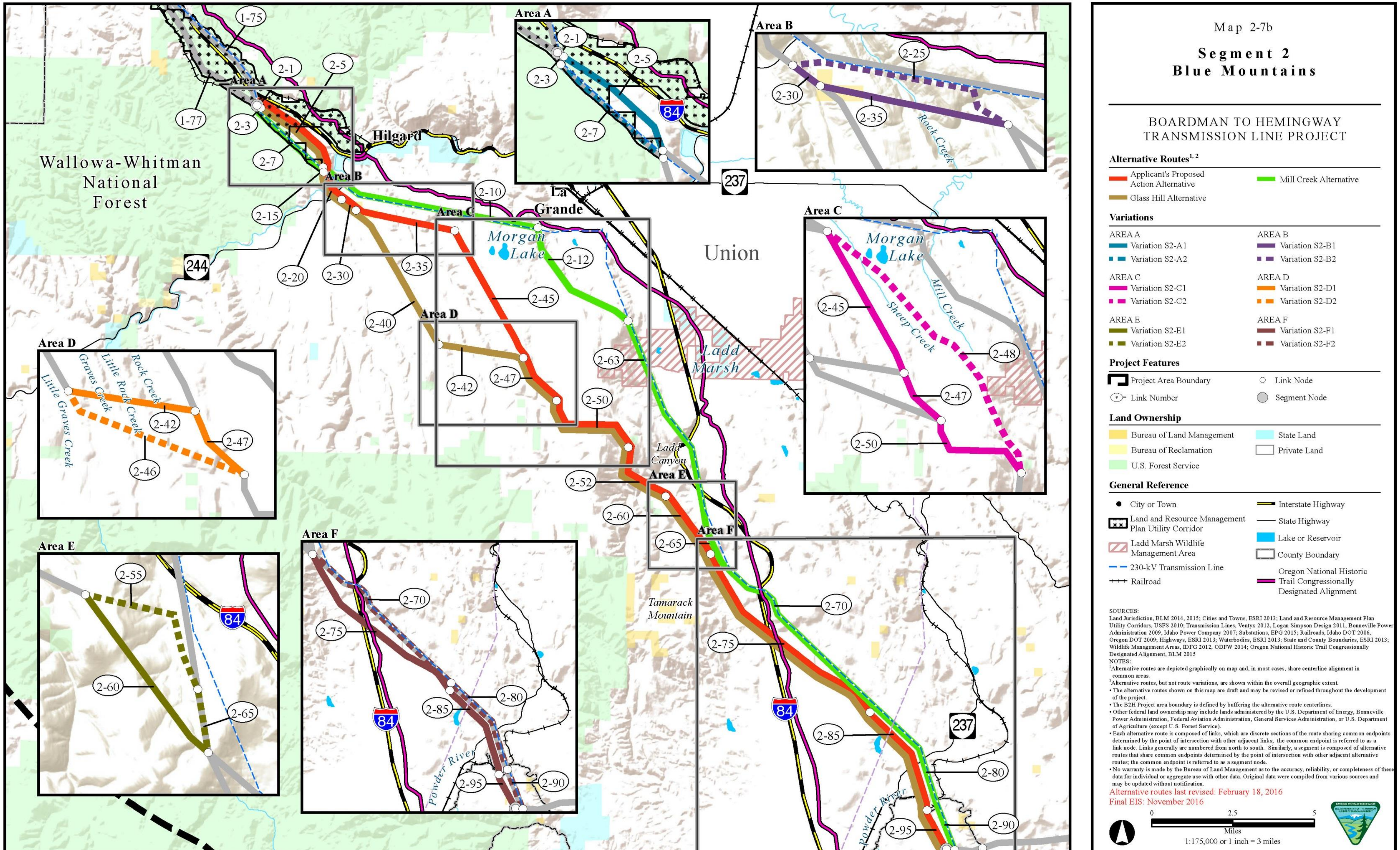
Variation S2-A2 (Links 2-3, 2-7; 2.9 miles) separates from the Segment 2 alternatives and parallels the existing 230-kV transmission line for 3 miles before rejoining the Segment 2 alternatives west of Hilgard Junction State Park.



Variation S2-A1



Variation S2-A2


Map 2-7b
Segment 2
Blue Mountains
BOARDMAN TO HEMINGWAY
TRANSMISSION LINE PROJECT
Alternative Routes[1, 2]
Applicant's Proposed Action Alternative
Mill Creek Alternative
Glass Hill Alternative
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
Project Features
Project Area Boundary
Link Node
Link Number
Segment Node
Land Ownership
Bureau of Land Management
State Land
Bureau of Reclamation
Private Land
U.S. Forest Service
General Reference
City or Town
Interstate Highway
Land and Resource Management Plan Utility Corridor
State Highway
Ladd Marsh Wildlife Management Area
Lake or Reservoir
County Boundary
230-kV Transmission Line
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; Wildlife Management Areas, IDFG 2012, ODFW 2014; 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.
• The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
• 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
2.5
5
Miles
1:175,000 or 1 inch = 3 miles
Wallowa-Whitman National Forest
Hilgard
La Grande
Union
Morgan Lake
Ladd Marsh
Ladd Canyon
Tamarack Mountain
Powder River
Rock Creek
Mill Creek
Sheep Creek
Graves Creek
Little Graves Creek
Little Rock Creek
Area A
Area B
Area C
Area D
Area E
Area F
84
237
244
1-75
1-77
2-1
2-3
2-5
2-7
2-10
2-12
2-15
2-20
2-25
2-30
2-35
2-40
2-42
2-45
2-46
2-47
2-48
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2-60
2-63
2-65
2-70
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2-80
2-85
2-90
2-95

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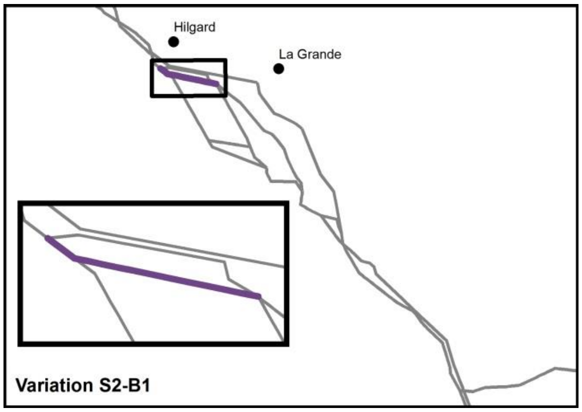
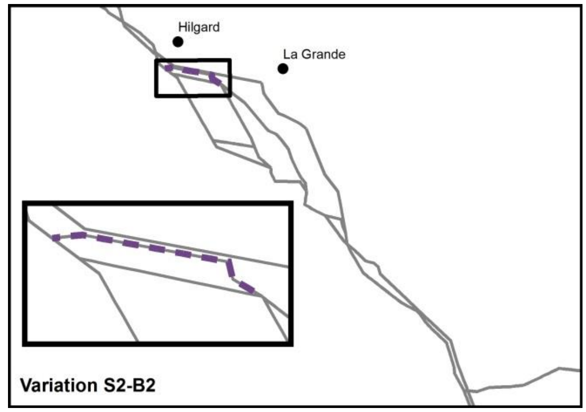
VARIATION S2 AREA B (WEST OF LA GRANDE)

Variation S2-B1 (Links 2-30, 2-35; 3.7 miles) shares the same alignment as the Applicant's Proposed Action Alternative route beginning south of Oregon Route 244 and traveling to the east for approximately 3 miles, located a 0.5 mile south of the existing 230-kV transmission line, crossing Rock Creek.

Variation S2-B2 (Link 2-25; 3.8 miles) separates from the Applicant's Proposed Action Alternative route south of Oregon Route 244 and more closely parallels the existing 230-kV transmission line for 3 miles before rejoining the Applicant's Proposed Action Alternative east of Rock Creek.

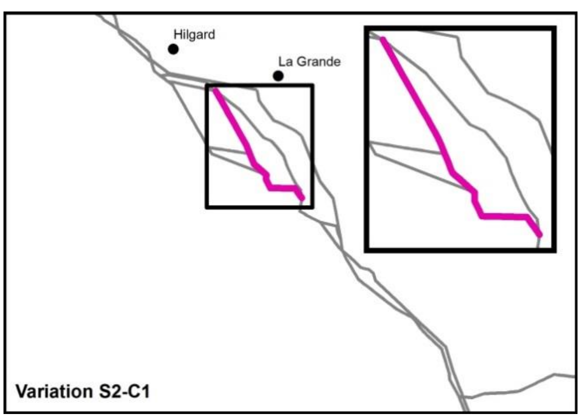


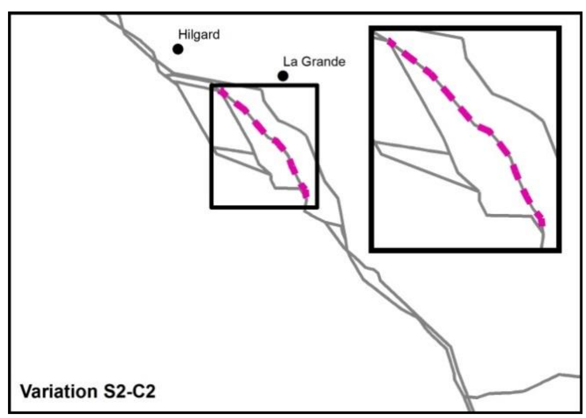


VARIATION S2 AREA C (ELK SONG RANCH AREA)

Variation S2-C1 (Links 2-45, 2-47, 2-50; 9.3 miles) shares the same alignment as the Applicant's Proposed Action Alternative beginning 1.5 miles west of Morgan Lake heading to the southeast between Rock Creek and Sheep Creek for 7 miles, before turning to the east across Glass Hill to an area 1.5 miles northwest of Ladd Creek.

Variation S2-C2 (Link 2-48; 8.8 miles) separates from the Applicant's Proposed Action Alternative and would be located 0.25 mile from Morgan Lake and roughly paralleling Variation S2-C1 between Mill Creek and Sheep Creek, staying east of Glass Hill, to an area 1.5 miles northwest of Ladd Creek.

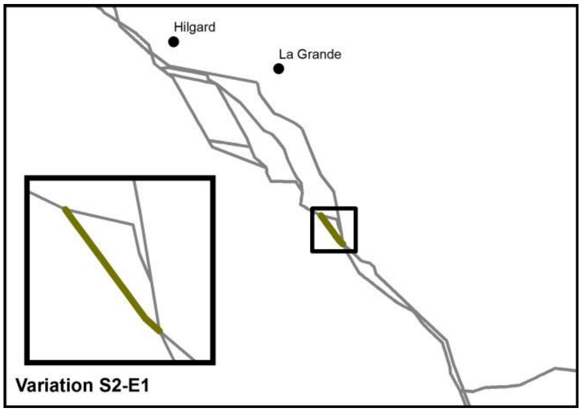


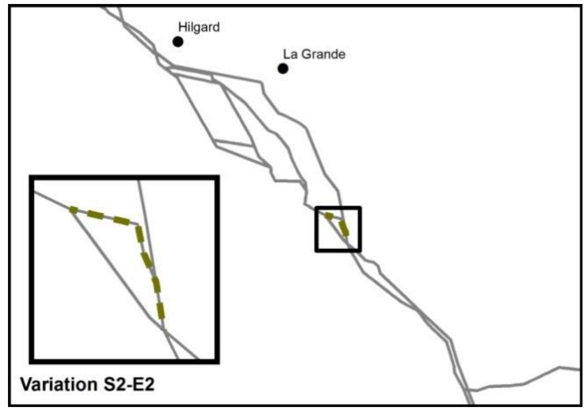


VARIATION S2 AREA E

Variation S2-E1 (Link 2-60; 2.3 miles) shares the same alignment as the Applicant's Proposed Action Alternative and Glass Hill Alternative 0.5 mile southeast of Ladd Creek and continuing 2 miles to the southeast.

Variation S2-E2 (Links 2-55, 2-65; 2.6 miles**)** separates from the Applicant's Proposed Action Alternative and Glass Hill Alternative southeast of Ladd Creek and traverses down a steep slope toward Interstate 84 before traversing back up the northeast flank of Baldy to rejoin the Applicant's Proposed Action and Glass Hill alternatives.

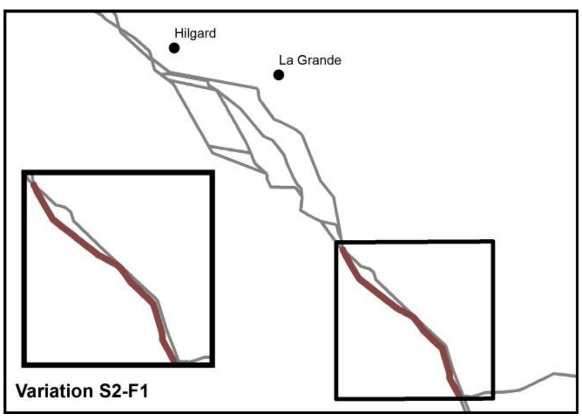


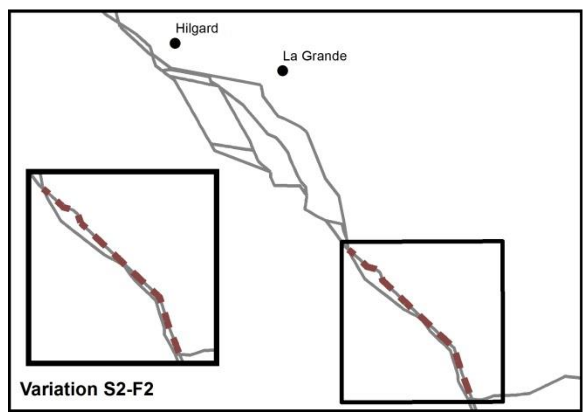


VARIATION S2 AREA F

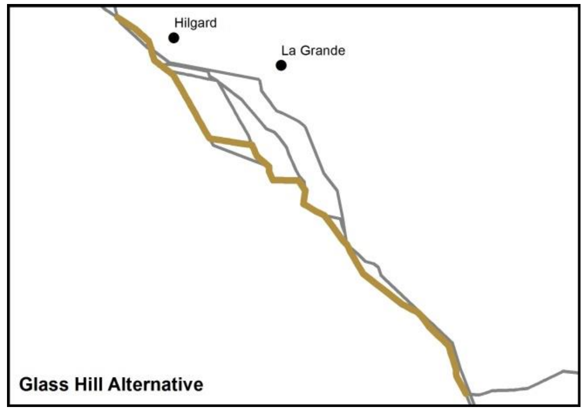
Variation S2-F1 (Links 2-75, 2-85, 2-95; 12.1 miles) shares the same alignment as all of the Segment 2 alternatives starting east of Baldy and traveling to the southeast for 12 miles crossing Interstate 84 and the Powder River to the end of Segment 2 on Riverdale Hill.

Variation S2-F2 (Links 2-70, 2-80, 2-90; 12.2 miles) separates from the Segment 2 alternatives east of Baldy and parallels an existing 230-kV transmission line for 12 miles crossing Interstate 84 and the Powder River to the end of Segment 2 on Riverdale Hill.





GLASS HILL ALTERNATIVE [LINKS 2-1, 2-5, 2-15, 2-20, 2-30, 2-40, 2-42, 2-47, 2-50, 2-52, 2-60, 2-75, 2-85, 2-95; 33.7 MILES]



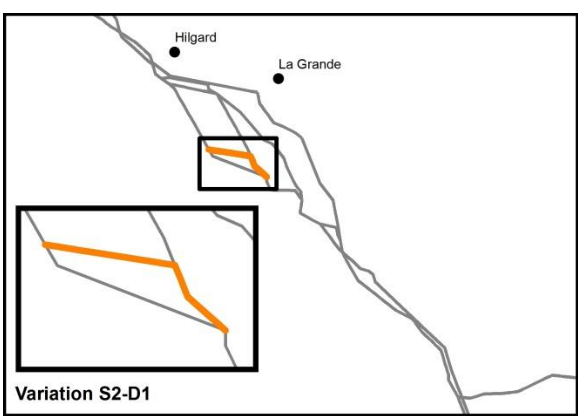
The Glass Hill Alternative was addressed in the Draft EIS. The alternative route was developed in response to various considerations of landowners, environmental resources, visual effects, and constructability expressed during the Community Advisory Process (Idaho Power Company 2012: 10-15) and scoping for the NEPA process to address concerns regarding proximity of the Applicant's Proposed Action Alternative to Ladd Marsh Wildlife Area and concerns about the visibility of the transmission line from La Grande in Union County.

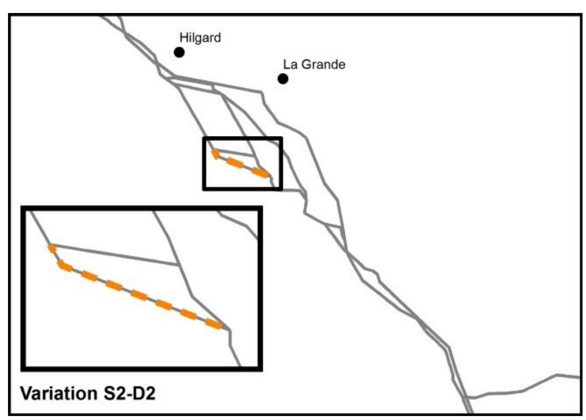
The alternative route continues from Segment 1 traveling to the southeast crossing Oregon Route 244, near Hilgard Junction State Park, separating from the Applicant's Proposed Action Alternative by continuing southeast adjacent to Little Graves Creek located 3 miles west of Morgan Lake, before turning to the east to rejoin the Applicant's Proposed Action Alternative 5 miles southwest of La Grande. The transmission line then would continue to the southeast for 11 miles before crossing Interstate 84 approximately 15 miles south of La Grande. Continuing to the southeast, the Glass Hill Alternative crosses Powder River to the end of Segment 2 on Riverdale Hill.

VARIATION S2 AREA D

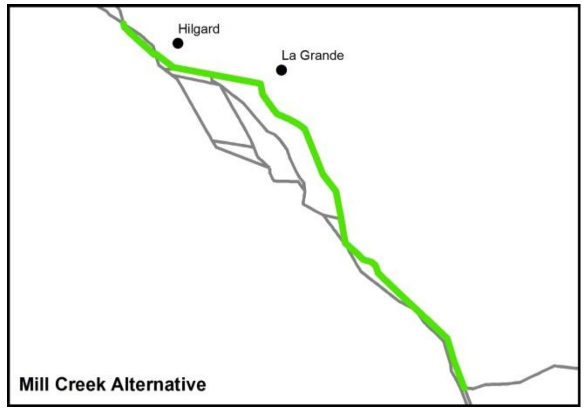
Variation S2-D1 (Links 2-42, 2-47; 4.3 miles) shares the same alignment as the Glass Hill Alternative starting at Little Graves Creek and crossing Graves Creek, Little Rock Creek, and Rock Creek as this route travels to the southeast toward Glass Hill.

Variation S2-D2 (Link 2-46; 4.1 miles) was recommended as part of comments on the Draft EIS, the intent of which was to help blend the transmission line structures into the surrounding landscape better and to avoid an elk population. Variation S2-D2 separates from the Glass Hill Alternative and roughly parallels Variation S2-D1 across Graves Creek, Little Rock Creek, and Rock Creek but located 0.75 mile farther to the south.





MILL CREEK ALTERNATIVE [LINKS 2-3, 2-7, 2-10, 2-12, 2-63, 2-65, 2-70, 2-80, 2-90; 34.0 MILES]

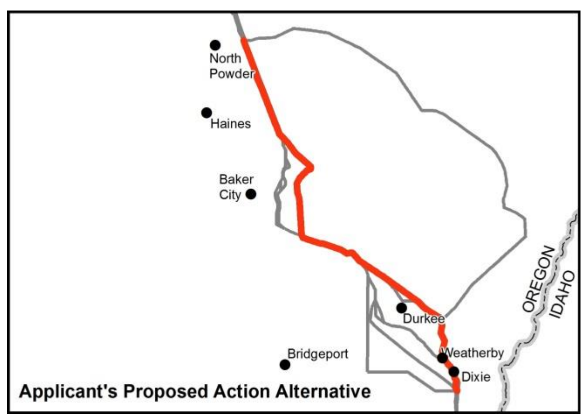


The Mill Creek Alternative was not addressed in the Draft EIS and is the result of a route-variation option recommended by Union County to parallel the existing 230-kV transmission line except in the general area of La Grande. The Mill Creek Alternative continues from Segment 1 traveling to the southeast where this alternative separates from the Applicant's Proposed Action Alternative, near Hilgard Junction State Park, crossing Oregon Route 244 parallel to the existing 230-kV transmission line toward La Grande to the east. The transmission line would follow the existing 230-kV transmission line until Table Mountain where this alternative route avoids closely approaching La Grande, and residences south of town, by turning to the south and would be located 1 mile east of Morgan Lake. Approximately 4 miles south of La Grande, this alternative route again parallels the existing 230-kV transmission line crossing the Ladd Marsh Wildlife Area and then Intestate 84 twice in Ladd Canyon before rejoining the Applicant's Proposed Action Alternative 12 miles south of La Grande. Continuing to the southeast, the Mill Creek Alternative crosses Powder River to the end of Segment 2 on Riverdale Hill.

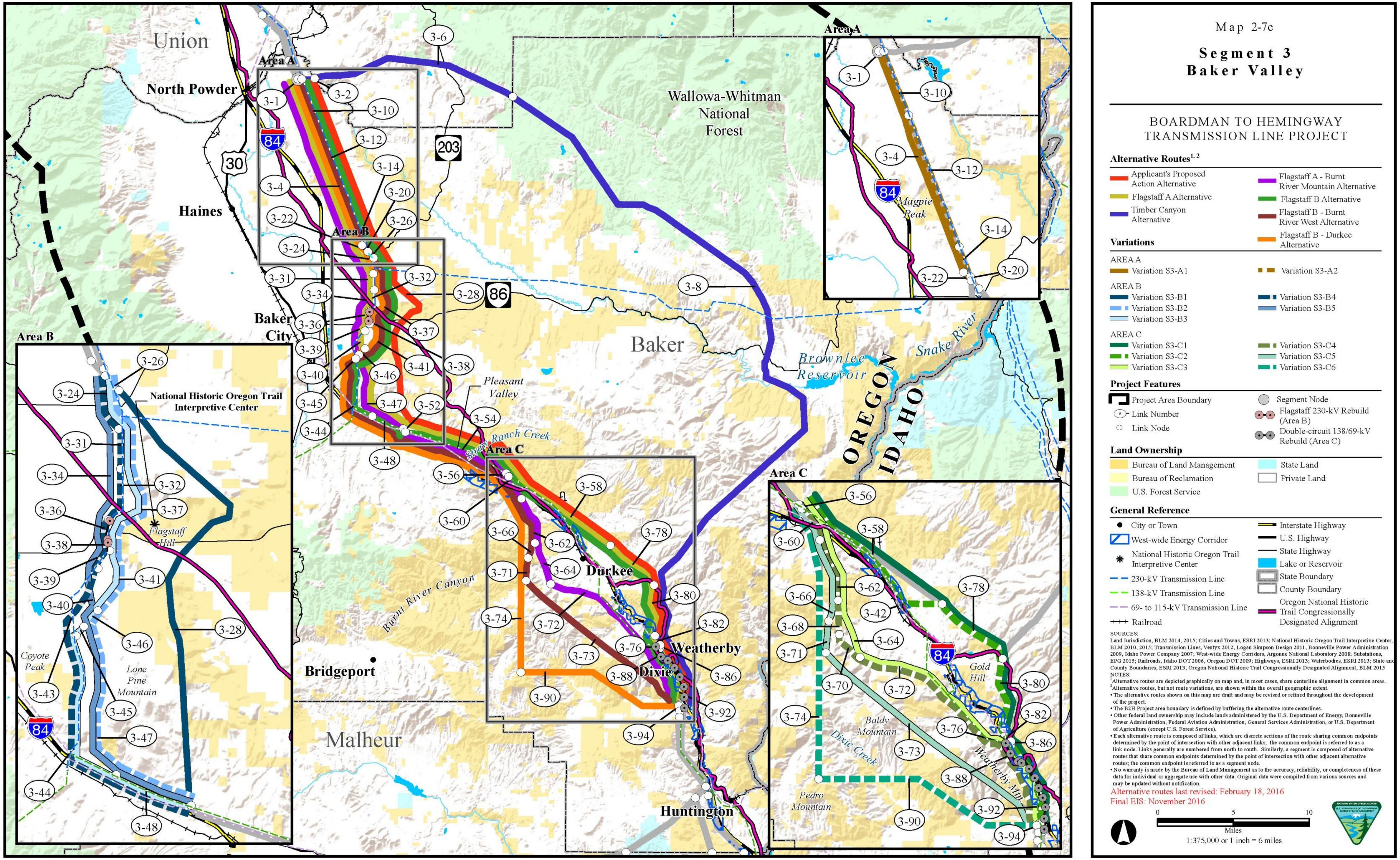
2.5.2.3 SEGMENT 3—BAKER VALLEY

Segment 3 begins at a point east of North Powder in Union County and ends at a point just south of Dixie in Baker County. The three alternative routes and three areas of local route variations in Segment 3 are shown on Map 2-7c.

APPLICANT'S PROPOSED ACTION ALTERNATIVE [LINKS 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 MILES]



The Applicant's Proposed Action Alternative in Segment 3 was addressed in the Draft EIS. It begins on Riverdale Hill paralleling an existing 230-kV transmission line to the southeast passing to the east of Magpie Peak and then turning east of Flagstaff Hill to pass to the east of the NHOTIC and 5 miles east of Baker City. After crossing Oregon Route 86, the alternative travels south to Interstate 84, to the east of Lone Pine Mountain, where the transmission line would roughly parallel the interstate on the north side for approximately 28 miles except near the community of Durkee and Gold Hill. In this area, the Applicant's Proposed Action Alternative is located 1.5 miles to the northeast of Interstate 84 before paralleling the interstate between the communities of Weatherby and Dixie to the end of Segment 3 at Dixie Creek.


Map 2-7c
Segment 3
Baker Valley
BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT
Alternative Routes[1, 2]
Applicant's Proposed Action Alternative
Flagstaff A Alternative
Timber Canyon Alternative
Flagstaff A - Burnt River Mountain Alternative
Flagstaff B 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-B2
Variation S3-B3
Variation S3-B4
Variation S3-B5
AREA C
Variation S3-C1
Variation S3-C2
Variation S3-C3
Variation S3-C4
Variation S3-C5
Variation S3-C6
Project Features
Project Area Boundary
Link Number
Link Node
Segment Node
Flagstaff 230-kV Rebuild (Area B)
Double-circuit 138/69-kV Rebuild (Area C)
Land Ownership
Bureau of Land Management
Bureau of Reclamation
U.S. Forest Service
State Land
Private Land
General Reference
City or Town
West-wide Energy Corridor
National Historic Oregon Trail Interpretive Center
230-kV Transmission Line
138-kV Transmission Line
69- to 115-kV Transmission Line
Railroad
Interstate Highway
U.S. Highway
State Highway
Lake or Reservoir
State Boundary
County Boundary
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, 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.
• The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
• 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
Miles
1:375,000 or 1 inch = 6 miles
Union
North Powder
Haines
Baker City
Baker
Malheur
Wallowa-Whitman National Forest
Pleasant Valley
Straw Ranch Creek
Burnt River Canyon
Bridgeport
Durkee
Weatherby
Dixie
Huntington
Brownlee Reservoir
Snake River
OREGON
IDAHO
Area A
Area B
Area C
National Historic Oregon Trail Interpretive Center
Flagstaff Hill
Coyote Peak
Lone Pine Mountain
Magpie Peak
Gold Hill
Baldy Mountain
Dixie Creek
Weatherby Mtn
Pedro Mountain
84
30
203
86

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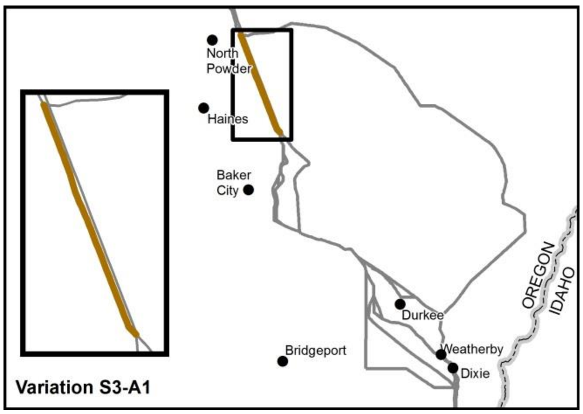
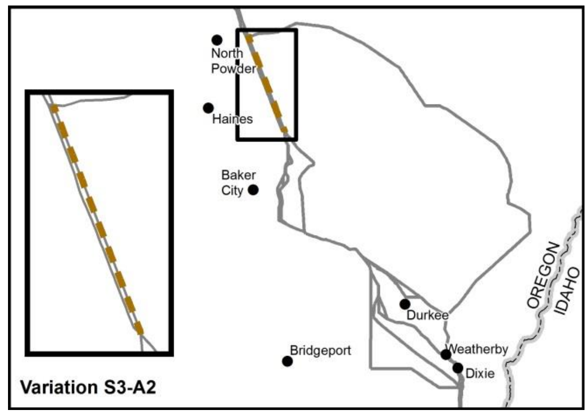
VARIATION S3 AREA A

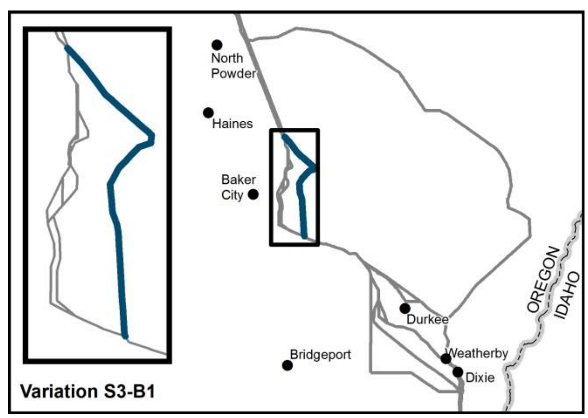
Variation S3-A1 (Links 3-4, 3-22; 12.4 miles) shares the same alignment as the Applicant's Proposed Action Alternative beginning on Riverdale Hill where it parallels an existing 230-kV transmission line for approximately 12 miles to the southeast passing to the east of Magpie Peak before ending approximately 1 mile north of Oregon Route 203.

Variation S3-A2 (Links 3-10, 3-12, 3-14, 3-20; 12.2 miles) was not addressed in the Draft EIS and is a route-variation option developed as a result of the BLM's request to colocate the proposed transmission line closer to the existing transmission line. This variation begins on Riverdale Hill paralleling an existing 230-kV (offset approximately 250-feet to the west) for approximately 12 miles to the southeast passing to the east of Magpie Peak before ending approximately 1 mile north of Oregon Route 203.





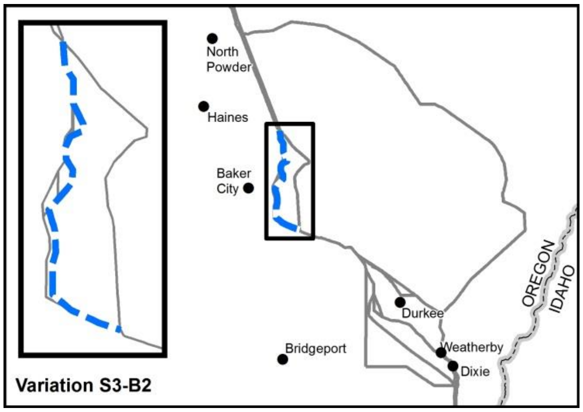
VARIATION S3 AREA B

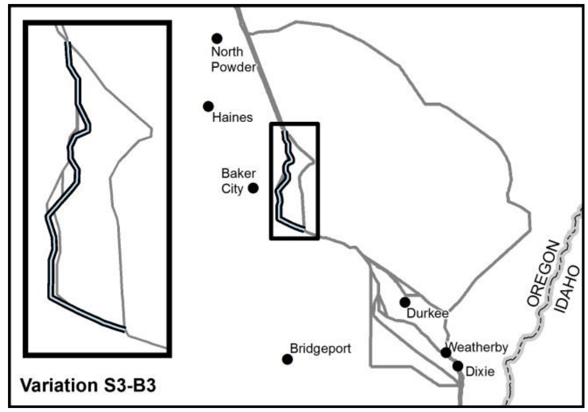


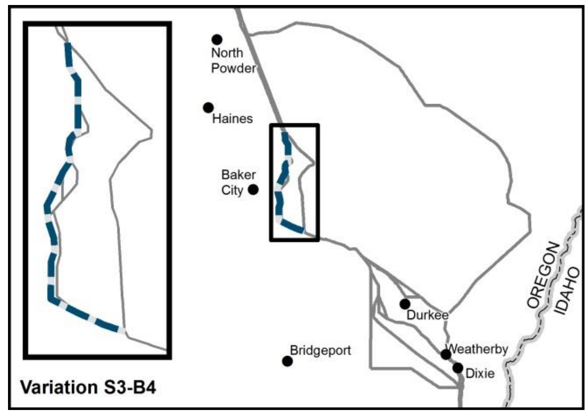
Variation S3-B1 (Links 3-26, 3-28; 13.9 miles) begins 1 mile north of Oregon Route 203 and is a part of the alignment of the Applicant's Proposed Action Alternative ending just north of an existing 138-kV transmission line and Interstate 84.

Variation S3-B2 (Links 3-24, 3-31, 3-37, 3-41, 4-46, 3-47, 3-48; 14.4 miles) begins 1 mile north of Oregon Route 203 and shares the same alignment as the Flagstaff B Alternative for approximately 8 miles before heading southeast following the Flagstaff A Alternative (Flagstaff Alternative from the Draft EIS) for approximately 4 miles. It then rejoins the Flagstaff B Alternative heading southeast for approximately 2 miles before ending just north of an existing 138-kV transmission line and Interstate 84.

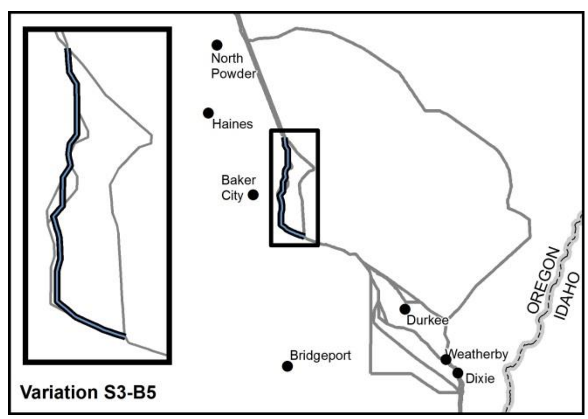
Variation S3-B3 (Links 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48; 14.7 miles) begins 1 mile north of Oregon Route 203 and shares the same alignment as the Flagstaff B Alternative before ending just north of an existing 138-kV transmission line and Interstate 84.







Variation S3-B4 (Links 3-24, 3-31, 3-32, 3-36, 3-38, 3-39, 3-43, 3-44, 3-48; 14.3 miles) begins 1 mile north of Oregon Route 203 and shares the same alignment as the Flagstaff A and B alternatives for approximately 1.5 miles. It then briefing heads southeast to parallel (250-feet offset to west) the existing 230-kV transmission line for approximately 2.6 miles. It then joins the alignment of the Flagstaff A Alternative in the vicinity of Oregon Route 86. It then leaves the Flagstaff A Alternative and heads southwest, roughly parallel to the existing 230-kV transmission line, before joining the Flagstaff B Alternative route, approximately 1.3 miles east of Coyote Peak. The variation follows the same alignment of the Flagstaff B Alternative for approximately 6.0 miles, ending just north of an existing 138-kV transmission line and Interstate 84.



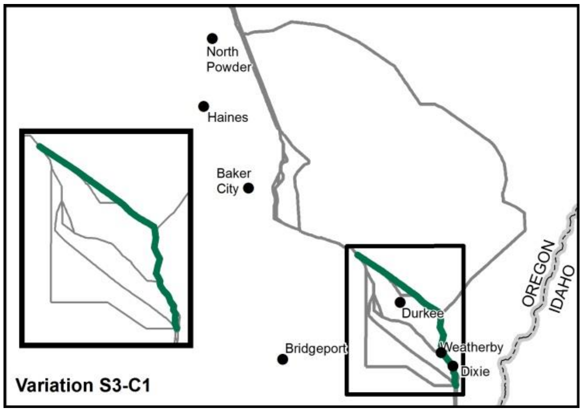
Variation S3-B5 (Links 3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48; 14.0 miles) begins 1 mile north of Oregon Route 203 and shares the same alignment as the Flagstaff A Alternative before ending just north of an existing 138-kV transmission line and Interstate 84.

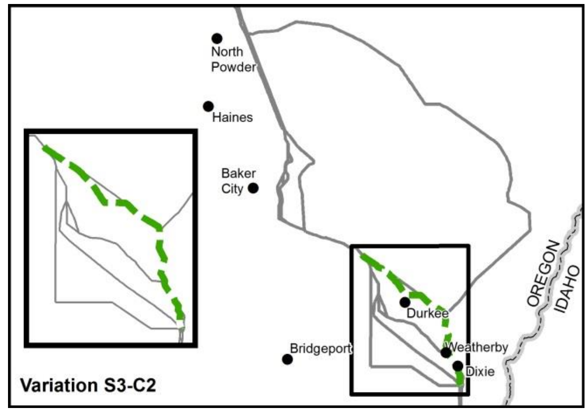
Variation S3 Area C

Variation S3-C1 (Links 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92; 21.1 miles) is part of the Applicant's Proposed Action Alternative beginning just east of Straw Ranch Creek and approximately 0.8 mile north of Interstate 84 and ending at Dixie Creek.

Variation S3-C2 (Links 3-56, 3-42, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92; 21.7 miles) begins just east of Straw Ranch Creek, approximately 0.8 mile north of Interstate 84 and an existing 138-kV transmission line. The variation heads southeast for 0.3 mile, crossing the existing 138-kV transmission line, and then continues parallel to the existing 138-kV transmission line (on south side) for approximately 4.8

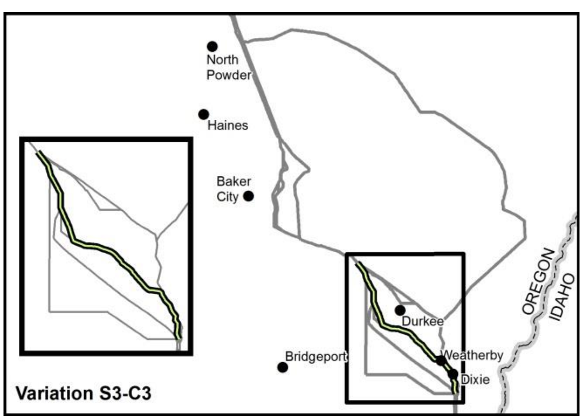
miles. Approximately 0.1 mile south of Hindman Road, the variation heads east for 0.1 mile crossing a railroad and the existing 138-kV transmission line again before heading southeast parallel to the existing 138-kV transmission line (on north side) for approximately 1.9 miles. The variation then heads directly east for 1.7 miles, crossing Durkee Creek approximately 0.7 mile north of Durkee, where it then joins the alignment of the Applicant's Proposed Action Alternative for 12.8 miles before ending at Dixie Creek.

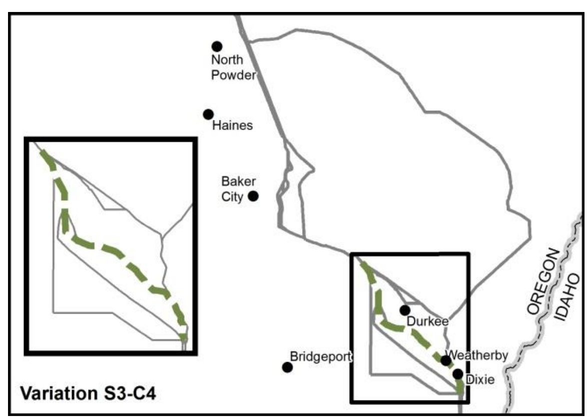




Variation S3-C3 (Links 3-56, 3-60, 3-62, 3-64, 3-72, 3-76, 3-88, 3-92; 21.1 miles) begins just east of Straw Ranch Creek and north of the existing 138-kV transmission line, approximately 0.8 mile north of Interstate 84, and north of the existing 138-kV transmission line. This variation follows the alignment of the Flagstaff A – Burnt River Mountain Alternative, which was addressed in the Draft EIS and intended to avoid Greater Sage-Grouse PHMA and the community of Durkee. The variation turns more to the south crossing Intestate 84 and then Burnt River Canyon, located 2.5 miles west of Durkee, before crossing Interstate 84 again near Weatherby. The variation then parallels the interstate for approximately 4 miles to the end of Segment 3 at Dixie Creek.

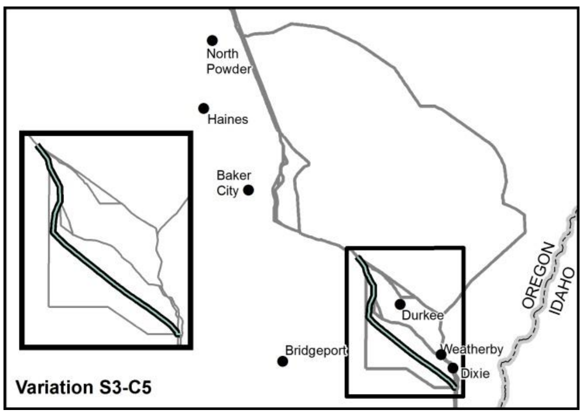
Variation S3-C4 (Links 3-56, 3-60, 3-62, 3-68, 3-70, 3-72, 3-76, 3-88, 3-92; 21.4 miles) shares the same alignment as Variation S3-C3, except for a 3.2-mile portion (Links 3-68 and 3-70) crossing Burnt River Canyon, approximately 0.6 mile west of the alignment that was addressed in the Draft EIS. This adjustment was developed in response to the comments on the Draft EIS.

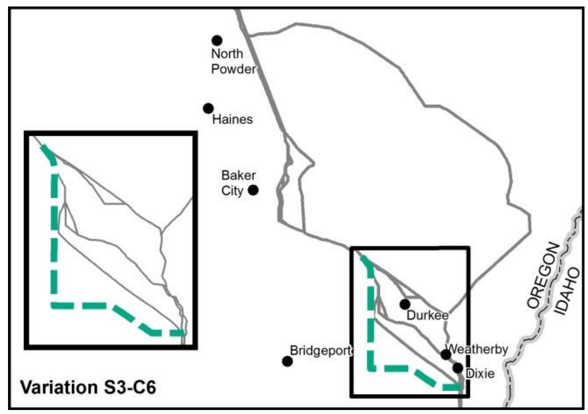




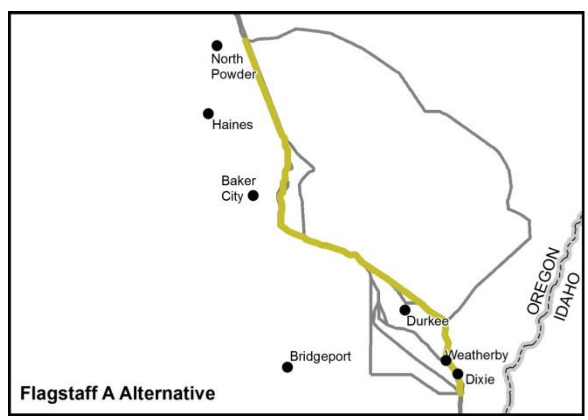
Variation S3-C5 (Links 3-56, 3-60, 3-62, 3-66, 3-71, 3-73, 3-94; 21.0 miles) begins just east of Straw Ranch Creek and north of the existing 138-kV transmission line, approximately 0.8 mile north of Interstate 84, and north of the existing 138-kV transmission line. This variation shares the same alignment as the Flagstaff B – Burnt River West Alternative. It crosses Burnt River Canyon before heading southeast for approximately 13 miles toward Weatherby Mountain, crossing the northern flank of Baldy Mountain. After traversing the southwestern flank of Weatherby Mountain the variation crosses Dixie Creek to the end of Segment 3 approximately 0.5 mile west of Interstate 84.

Variation S3-C6 (Links 3-56, 3-60, 3-74, 3-90, 3-94; 24.7 miles) shares the same alignment as Flagstaff B – Durkee Alternative in the Durkee area. This alignment is new based on comments on the Draft EIS received from Baker County and is intended to avoid more private and agricultural lands. As the route travels to the south, it crosses Burnt River Canyon before turning east on the northeast flank of Pedro Mountain crossing Dixie Creek twice, and the Snake River Mormon Basin Backcountry Byway, to the end of Segment 3 at Dixie Creek approximately 0.5 mile west of Interstate 84.





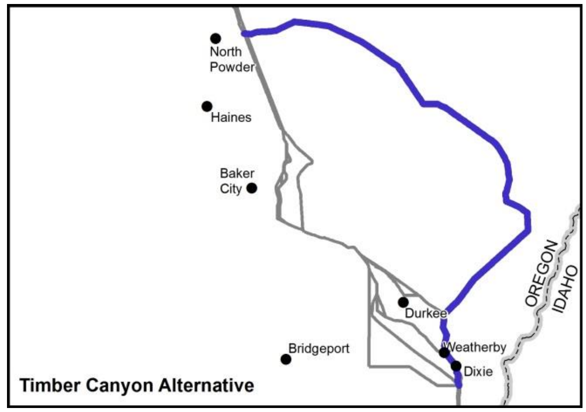
FLAGSTAFF A ALTERNATIVE [LINKS 3-4, 3-22, 3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48, 3-52, 3-54, 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92; 55.3 MILES]



The Flagstaff A Alternative was addressed in the Draft EIS as the Flagstaff Alternative and was developed to parallel the existing 230-kV transmission line and avoid the Greater Sage-Grouse PHMA in the area east of Baker City.

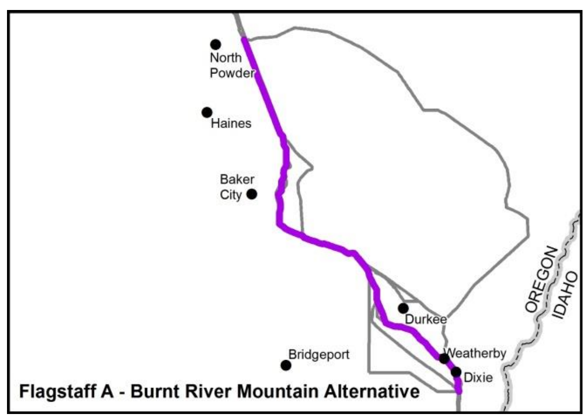
The Flagstaff A Alternative begins on Riverdale Hill colocated to closely parallel an existing 230-kV transmission line, where possible, to the southeast passing to the east of Magpie Peak and turning south near Oregon Route 203. The route continues to be colocated to closely parallel the existing 230-kV transmission line, where possible, west of Flagstaff Hill and the NHOTIC. In this area, the transmission line would be located 3 miles east of Baker City continuing to the south toward Interstate 84 passing on the west side of Lone Pine Mountain. This alternative route roughly parallels the interstate on the north side for 31 miles except near the community of Durkee and Gold Hill. In this area, the Flagstaff Alternative is located 1.5 miles to the northeast of Interstate 84 before paralleling the interstate between the communities of Weatherby and Dixie to the end of Segment 3 at Dixie Creek.

TIMBER CANYON ALTERNATIVE [LINKS 3-1, 3-2, 3-6, 3-8, 3-80, 3-82, 3-86, 3-88, 3-92; 70.3 MILES]



The Timber Canyon Alternative was addressed in the Draft EIS and was developed to avoid effects on Greater Sage-Grouse PHMAs and Oregon NHT segments. The Timber Canyon Alternative begins on Riverdale Hill where the route heads east passing north of Thief Valley Reservoir and ascending the southern edge of Wallowa Mountains onto the Wallowa-Whitman National Forest. After crossing Oregon Route 203 north of the community of Medical Springs, this route turns to the southeast crossing Big Creek and Goose Creek before passing east of the community of Sparta to Eagle Creek. In this area, the route turns to the south staying west of the communities of New Bridge and Richland then crosses the Powder River before turning to the southwest. This alternative route travels 17 miles southwest toward the community of Weatherby passing to the west of Big Lookout Mountain and Daly Creek. The Timber Canyon Alternative does not parallel existing transmission lines except at the southern end of the route near Weatherby, the transmission line would parallel Interstate 84 for approximately 4 miles to the end of Segment 3 at Dixie Creek.

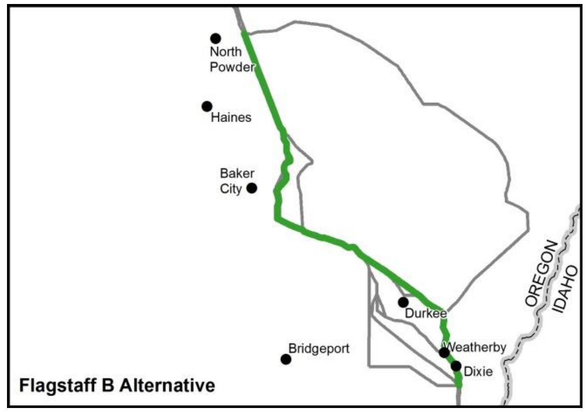
FLAGSTAFF A – BURNT RIVER MOUNTAIN ALTERNATIVE [LINKS 3-10, 3-12, 3-14, 3-20, 3-24, 3-34, 3-36, 3-38, 3-39, 3-40, 3-46, 3-47, 3-48, 3-52, 3-54, 3-56, 3-60, 3-62, 3-64, 3-72, 3-76, 3-88, 3-92; 55.3 MILES]



The Burnt River Mountain portion of the Flagstaff A – Burnt River Mountain Alternative was addressed in the Draft EIS and was intended to avoid Greater Sage-Grouse PHMA and the community of Durkee.

The Flagstaff A – Burnt River Mountain Alternative begins on Riverdale Hill, colocated to closely parallel an existing 230-kV transmission line where possible, to the southeast passing to the east of Magpie Peak and then turning east of Flagstaff Hill to pass to the west of the NHOTIC and 5 miles east of Baker City. After crossing Oregon Route 86, the alternative route travels south to Interstate 84, to the east of Lone Pine Mountain, where the transmission line would roughly parallel the interstate on the north side for 28 miles except near the community of Durkee. In this area the route turns more to the south crossing Intestate 84 and then Burnt River Canyon, located 2.5 miles southeast of Durkee, before crossing Interstate 84 again near Weatherby. The alternative route then parallels the interstate for 4 miles to the end of Segment 3 at Dixie Creek.

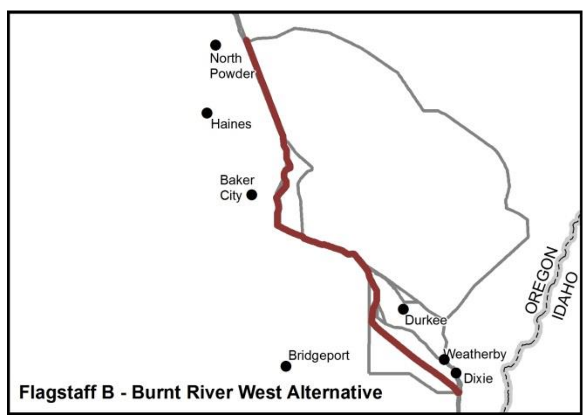
FLAGSTAFF B ALTERNATIVE [LINKS 3-4, 3-22, 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48, 3-52, 3-54, 3-58, 3-78, 3-80, 3-82, 3-86, 3-88, 3-92; 56.0 MILES]



The Flagstaff B Alternative was not addressed as such in the Draft EIS and is the result of incorporating a route-variation option recommended in comments between the Draft and Final EIS. The Flagstaff B Alternative begins on Riverdale Hill paralleling an existing 230-kV transmission line to the southeast passing to the east of Magpie Peak. Beginning 1 mile north of Oregon Route 203, the Flagstaff B Alternative follows the alignment of the Flagstaff A Alternative for approximately 0.6 mile before joining other route-variation option alignments to avoid private lands and agricultural operations recommended between the Draft and Final EIS.

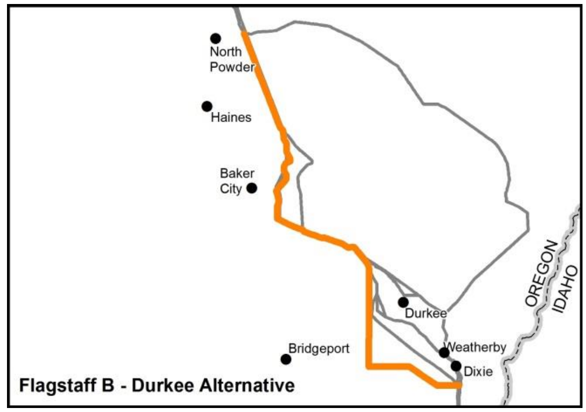
The alternative route follows the existing 230-kV transmission line for 1 mile before heading southeast into Flagstaff Gulch before turning southwest crossing Oregon Route 86 1 mile west of Flagstaff Hill. The route turns to the southwest before turning south as it closely parallels the existing 230-kV transmission line for 3 miles and then travels south to Interstate 84, where the alternative would roughly parallel the interstate on the north side for 31 miles except near the community of Durkee and Gold Hill. In this area, the alternative is located 1.5 miles to the northeast of Interstate 84 before paralleling the interstate between the communities of Weatherby and Dixie to the end of Segment 3 at Dixie Creek.

FLAGSTAFF B – BURNT RIVER WEST ALTERNATIVE [LINKS 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 MILES]



The Flagstaff B – Burnt River West Alternative was not addressed as such in the Draft EIS and is the result of incorporating route-variation options recommended in comments between the Draft and Final EIS. The Flagstaff B – Burnt River West Alternative begins on Riverdale Hill paralleling an existing 230-kV transmission line (offset approximately 250-feet to the west). Beginning 1 mile north of Oregon Route 203, the Flagstaff B Alternative follows the alignment of the Flagstaff A Alternative for approximately 0.6 mile before joining other route-variation option alignments to avoid private lands and agricultural operations recommended since the Draft EIS was released for public review. The alternative follows the existing 230-kV transmission line for 1 mile before heading southeast into Flagstaff Gulch before turning southwest crossing Oregon Route 86 1 mile west of Flagstaff Hill. The route turns to the southwest before turning south as it closely parallels the existing 230-kV transmission line for 3 miles and then travels south to Interstate 84. To the east of Straw Ranch Creek, the alternative crosses a 138-kV transmission line and Interstate 84 and follows a route-variation option recommended by Baker County. The alternative route crosses Burnt River Canyon before heading southeast for approximately 13 miles toward Weatherby Mountain, crossing the northern flank of Baldy Mountain. After traversing the southwestern flank of Weatherby Mountain the alternative route crosses Dixie Creek to the end of Segment 3 approximately 0.5 mile west of Interstate 84.

FLAGSTAFF B – DURKEE ALTERNATIVE [LINKS 3-4,3-22, 3-24, 3-31, 3-37, 3-41, 3-46, 3-45, 3-44, 3-48, 3-52, 3-54, 3-56, 3-60, 3-74, 3-90, 3-94; 59.6 MILES]

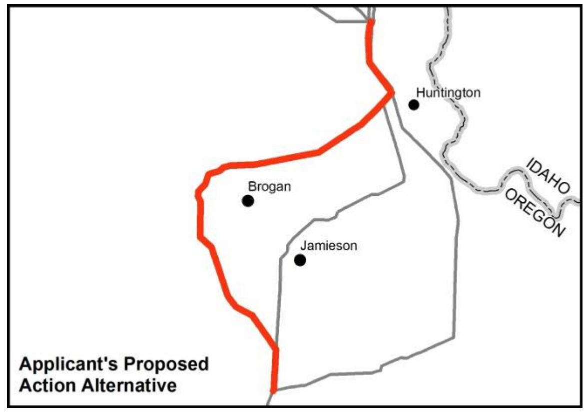


The Flagstaff B – Durkee Alternative was not addressed as such in the Draft EIS and is the result of incorporating a route-variation option recommended in comments between the Draft and Final EIS. The Flagstaff B – Durkee Alternative begins on Riverdale Hill paralleling an existing 230-kV transmission line to the south passing to the east of Magpie Peak. Beginning 1 mile north of Oregon Route 203, the Flagstaff B Alternative follows the alignment of the Flagstaff A Alternative for approximately 0.6 mile before joining a new alignment the result of route-variation options to avoid private lands and agricultural operations recommended since the Draft EIS was released for public review. The alternative follows an existing 230-kV transmission line for 1 mile before heading southeast into Flagstaff Gulch before turning southwest crossing Oregon Route 86 1 mile west of Flagstaff Hill. The route turns to the southwest before turning south as it closely parallels the existing 230-kV transmission line for 3 miles and then travels south to Interstate 84, roughly paralleling the interstate for 9 miles. To the east of Straw Ranch Creek, the alternative route crosses a 138-kV transmission line and Interstate 84 and follows a route-variation option recommended by Baker County. The alternative route travels south for 11 miles crossing Burnt River Canyon and below Sheep Mountain before turning and heading east on the northeastern flank of Pedro Mountain, crossing Dixie Creek twice, and the Snake River Mormon Basin Backcountry Byway, to the end of Segment 3 at Dixie Creek approximately 0.5 mile west of Interstate 84.

2.5.2.4 SEGMENT 4—BROGAN

Segment 4 begins at a point just south of Dixie in Baker County and ends at a point south of Jamieson in Malheur County. The three alternative routes and one area of local route variations in Segment 4 are shown on Map 2-7d.

APPLICANT'S PROPOSED ACTION ALTERNATIVE [LINKS 4-1, 4-10, 4-11, 4-13, 4-25, 4-45, 4-50, 4-65, 4-70; 40.1 MILES]

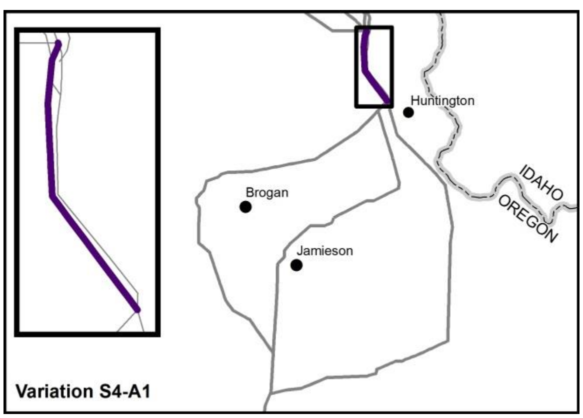


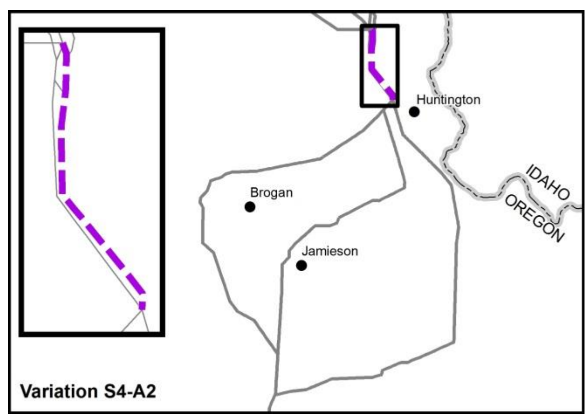
The Applicant's Proposed Action Alternative in Segment 4 was addressed in the Draft EIS and parallels an existing 138-kV transmission line to the south from Dixie Creek to Durbin Creek (west of the community of Huntington), approximately 5 miles, before turning to the southwest toward the community of Brogan. The route passes north of Lost Tom Mountain and then crosses Birch Creek and Phipps Creek east of Brogan. The transmission line would cross U.S. Highway 26, approximately 4 miles east of Brogan, where the route turns to the south running along the eastern flank of Cottonwood Mountain to the end of the Segment 4 north of Bully Creek.

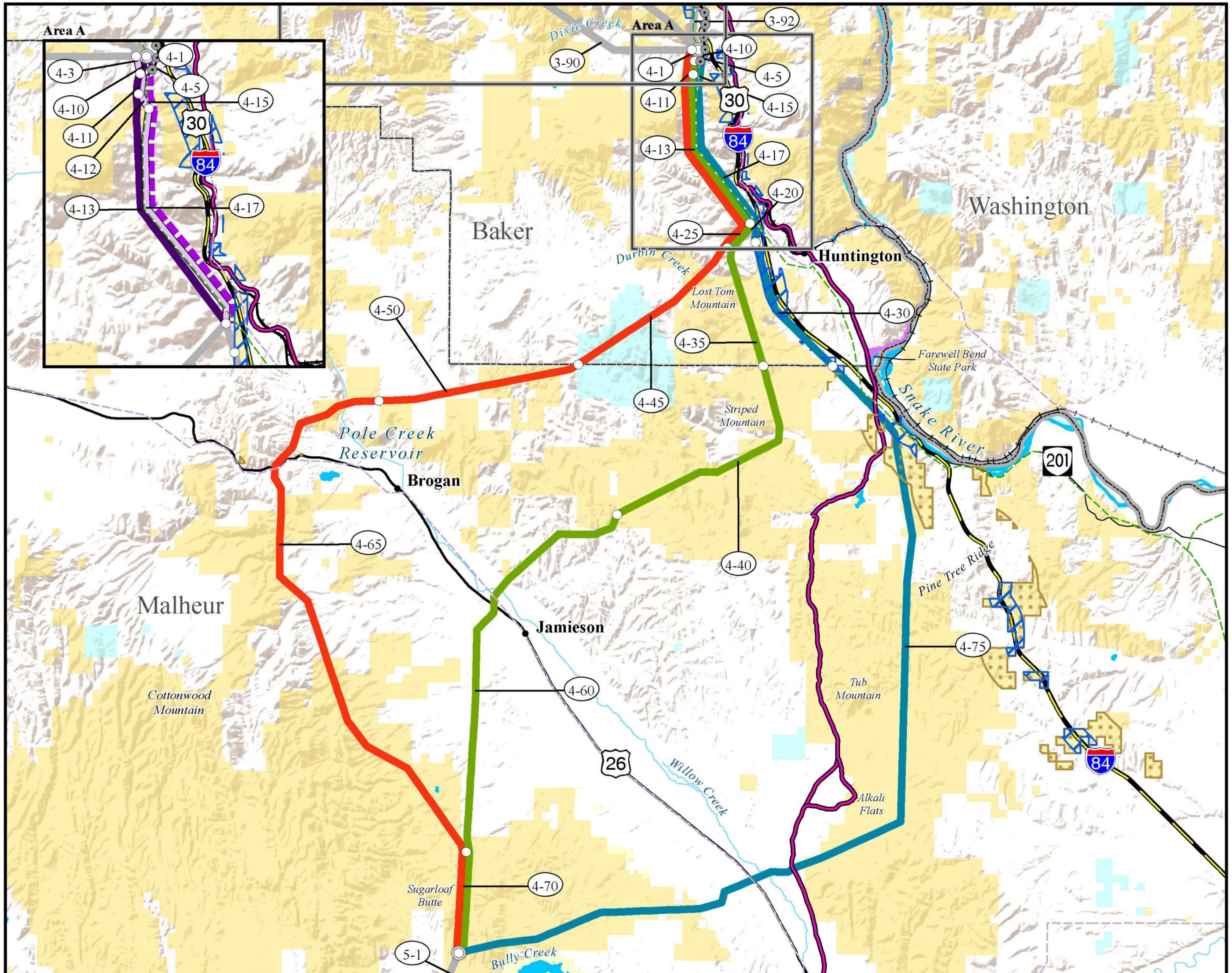
VARIATION S4 AREA A (COLOCATION NORTHWEST OF HUNTINGTON)

Variation S4-A1 (Links 4-1, 4-10, 4-11, 4-13; 5.9 miles) is the same alignment as Applicant's Proposed Action Alternative and Willow Creek Alternative paralleling an existing 138-kV transmission line from Dixie Creek to Durbin Creek (west of community of Huntington) for approximately 6 miles.

Variation S4-A2 (Links 4-1, 4-5, 4-15, 4-17; 6.0 miles) separates from the Segment 4 alternatives by more closely paralleling the existing 138-kV transmission line from Dixie Creek to Durbin Creek (west of community of Huntington) for approximately 6 miles before rejoining the Segment 4 alternative routes.







Map 2-7d

Segment 4
Brogan

BOARDMAN TO HEMINGWAY TRANSMISSION LINE PROJECT

Alternative Routes[1, 2]

- Applicant's Proposed Action Alternative
- Tub Mountain South Alternative
- Willow Creek Alternative

Variations

AREA A
- Variation S4-A1
- Variation S4-A2
- Variation S4-A3

Project Features

- Link Number
- Link Node
- Segment Node
- Double-circuit 138/69-kV Rebuild (Area A)

Land Ownership

- Bureau of Land Management
- Bureau of Reclamation
- State Land
- Private Land

General Reference

- City or Town
- Resource Management Plan Utility Corridor
- West-wide Energy Corridor
- Farewell Bend State Park
- 138-kV Transmission Line
- 69- to 115-kV Transmission Line
- Railroad
- Interstate Highway
- U.S. Highway
- State Highway
- Lake or Reservoir
- County Boundary
- 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; 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.
- The alternative routes shown on this map are draft and may be revised or refined throughout the development of the project.
- 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 2.5 5
Miles
1:200,000 or 1 inch = 3 miles

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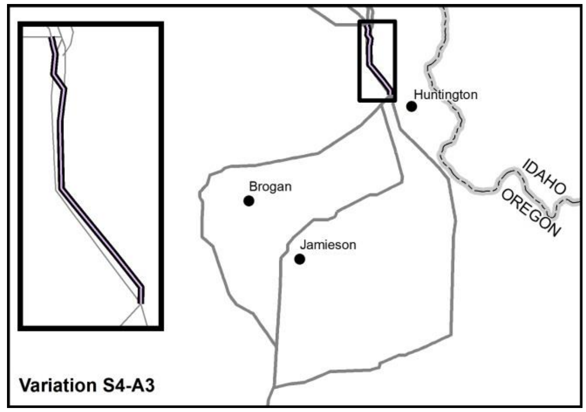
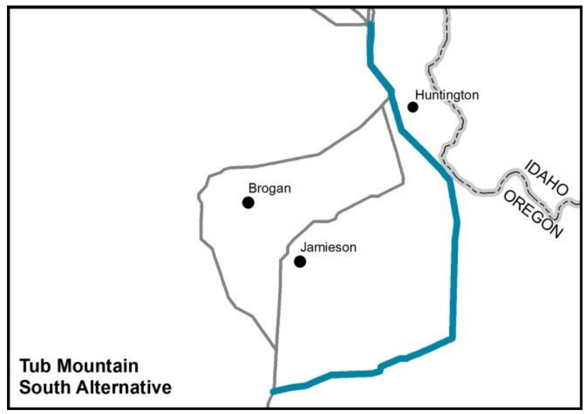


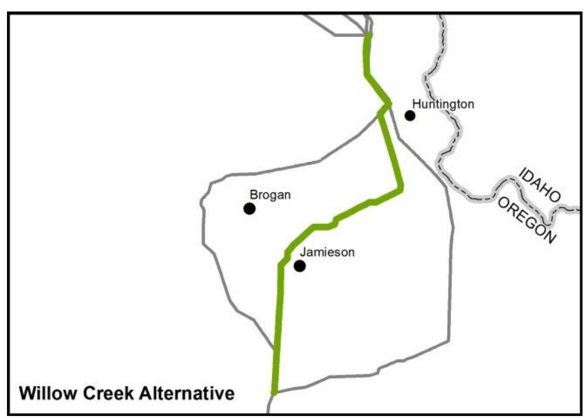
Variation S4-A3 (Links 4-3, 4-11, 4-12, 4-17; 6.1 miles) begins 0.2 mile west of the Applicant's Proposed Action Alternative before joining the Applicant's Proposed Action Alternative for 0.4 mile before turning southeast to closely parallel the existing 138-kV transmission line from Dixie Creek to Durbin Creek (west of community of Huntington) for approximately 5 miles before rejoining the Segment 4 alternative routes.

TUB MOUNTAIN SOUTH ALTERNATIVE [LINKS 4-1, 4-5, 4-15, 4-17, 4-20, 4-30, 4-75; 40.5 MILES]



The Tub Mountain South Alternative, addressed in the Draft EIS, was developed to avoid Greater Sage-Grouse habitat in the Brogan area, and was identified in the Draft EIS as the Agency Preferred Alternative. The Tub Mountain South Alternative route was colocated to closely parallel an existing 138-kV transmission line to the south from Dixie Creek to Durbin Creek (west of the community of Huntington), approximately 5 miles, before turning to the southeast toward the Snake River. Where possible (Links 4-20 and 4-21), the route is within a West-wide Energy Corridor and BLM-designated utility corridor (along the northern portion of Link 4-75). This route passes within 1 mile of Farewell Bend State Recreation Area, adjacent to an existing 138-kV transmission line, where the alternative route turns south crossing Pine Tree Ridge and along the eastern flank of Tub Mountain. On the Alkali Flats, 8 miles north of the community of Vale, this alternative turns toward the southwest crossing Willow Creek and U.S. Highway 26 to the end of Segment 4 north of Bully Creek.

WILLOW CREEK ALTERNATIVE [LINKS 4-1, 4-10, 4-11, 4-13, 4-25, 4-35, 4-40, 4-60, 4-70; 34.6 MILES]

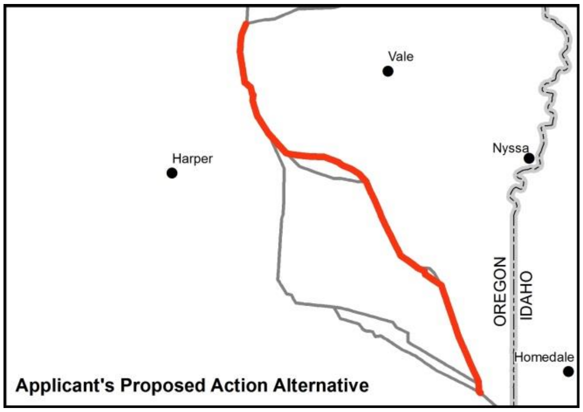


The Willow Creek Alternative, addressed in the Draft EIS, was developed to avoid Greater Sage-Grouse habitat and several known Greater Sage-Grouse leks. The Willow Creek Alternative route parallels an existing 138-kV transmission line to the south from Dixie Creek to Durbin Creek (west of the community of Huntington), approximately 5 miles, before continuing to the south toward Birch Creek. In this area, the route turns to the southwest passing south of Striped Mountain, Brosman Mountain, and McDowell Butte. Approximately 1.5 miles northwest of the community of Jamieson, at the crossing of U.S. Highway 26, the route turns to the south to pass between Sugarloaf Butte and Hope Butte to the end of Segment 4 north of Bully Creek.

2.5.2.5 Segment 5—Malheur

Segment 5 begins at a point south of Jamieson in Malheur County and ends at a point 3 miles west of the Oregon-Idaho border. The three alternative routes and two areas of local route variations in Segment 5 are shown on Map 2-7e.

Applicant's Proposed Action Alternative [Links 5-1, 5-5, 5-10, 5-15, 5-40, 5-50, 5-55, 5-65, 5-70, 5-75; 40.4 miles]

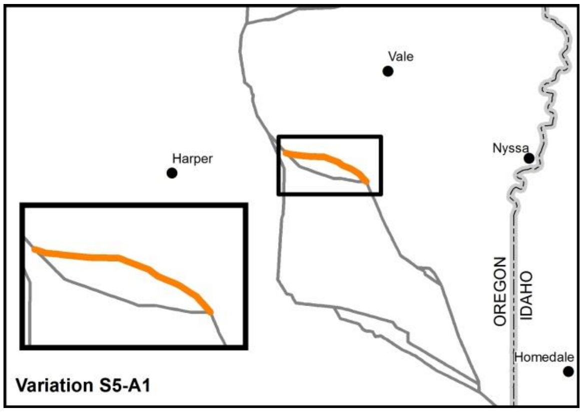


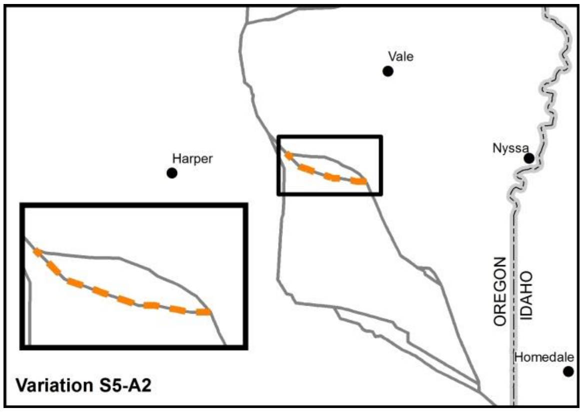
The Applicant's Proposed Action Alternative in Segment 5 was identified as the Agency Preferred Alternative in the Draft EIS. It crosses Bully Creek at the beginning of Segment 5 traveling to the south where the route crosses Malheur Canyon and U.S. Highway 20 before turning toward the east to pass around the north side of Double Mountain. The route then continues to the southeast crossing the Owyhee River in a portion of the river determined by the BLM to be suitable for designation as a National WSR. South of the Owyhee River, the transmission line would continue to the southeast to the end of Segment 5 near Succor Creek approximately 3 miles west of the Oregon-Idaho border.

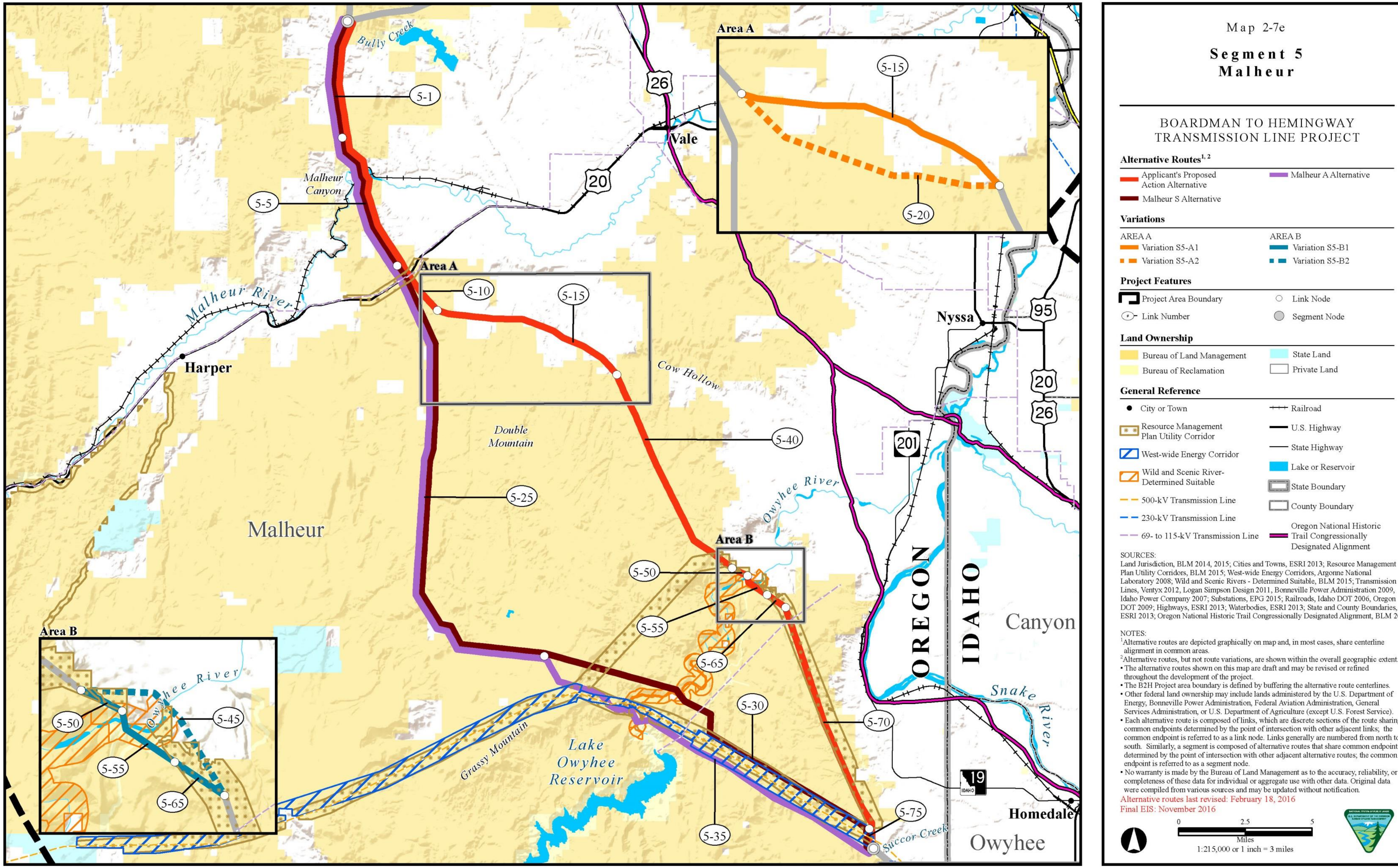
Variation S5 Area A (Double Mountain Area)

Variation S5-A1 (Link 5-15; 7.4 miles), addressed in the Draft EIS, was developed to avoid crossing lands with wilderness characteristics. Variation S5-A1 is the alignment of the Applicant's Proposed Action Alternative south of U.S. Highway 20 to Cow Hollow for a distance of approximately 7 miles.

Variation S5-A2 (Link 5-20; 7.4 miles), addressed in the Draft EIS, separates from the Applicant's Proposed Action Alternative, south of U.S. Highway 20, by being located about a mile farther to the south before rejoining the Applicant's Proposed Action Alternative in Cow Hollow. Variation S5-A2 crosses areas of lands with wilderness characteristics.






Map 2-7e
Segment 5
Malheur
BOARDMAN TO HEMINGWAY
TRANSMISSION LINE PROJECT
Alternative Routes[1,2]
Applicant's Proposed Action Alternative
Malheur S Alternative
Malheur A Alternative
Variations
AREA A
Variation S5-A1
Variation S5-A2
AREA B
Variation S5-B1
Variation S5-B2
Project Features
Project Area Boundary
Link Number
Link Node
Segment Node
Land Ownership
Bureau of Land Management
Bureau of Reclamation
State Land
Private Land
General Reference
City or Town
Resource Management Plan Utility Corridor
West-wide Energy Corridor
Wild and Scenic River- Determined Suitable
500-kV Transmission Line
230-kV Transmission Line
69- to 115-kV Transmission Line
Railroad
U.S. Highway
State Highway
Lake or Reservoir
State Boundary
County Boundary
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
NOTES:
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[2]Alternative routes, but not route variations, are shown within the overall geographic extent.
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• 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
2.5
5
Miles
1:215,000 or 1 inch = 3 miles
Area A
Area B
5-1
5-5
5-10
5-15
5-20
5-25
5-30
5-35
5-40
5-45
5-50
5-55
5-65
5-70
5-75
Malheur Canyon
Malheur River
Harper
Vale
Nyssa
Homedale
Malheur
Canyon
Owyhee
OREGON
IDAHO
Double Mountain
Cow Hollow
Owyhee River
Bully Creek
Grassy Mountain
Lake Owyhee Reservoir
Snake River
Succor Creek
26
20
95
201
19

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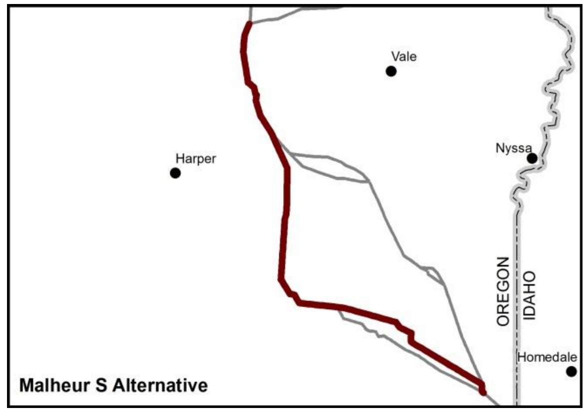
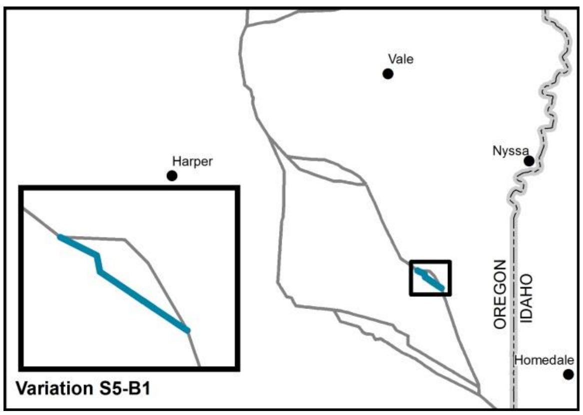
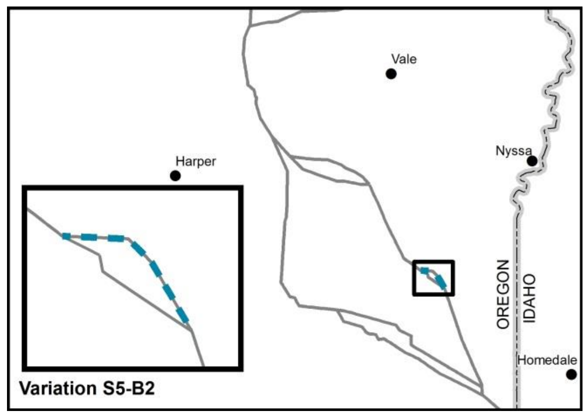
Variation S5 Area B (Owyhee River Crossing)

Variation S5-B1 (Links 5-50, 5-55, 5-56; 2.5 miles), addressed in the Draft EIS, is the alignment of the Applicant's Proposed Action Alternative across the Owyhee River in an area determined by the BLM to be suitable for designation as a National WSR for a distance of approximately 2.5 miles.



Variation S5-B2 (Link 5-45; 2.8 miles) was not addressed in the Draft EIS and is a route-variation option developed by the BLM farther to the northeast and outside the area determined to be suitable for wild and scenic designation. Variation S5-B2 separates from the Applicant's Proposed Action Alternative at the crossing of the Owyhee River.

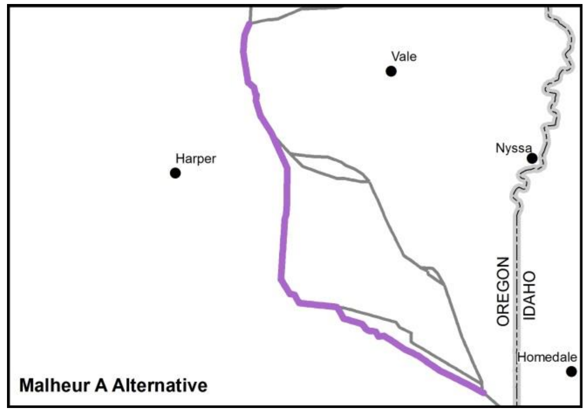




Malheur S Alternative [Links 5-1, 5-5, 5-25, 5-30, 5-75; 43.5 miles]

The Malheur S Alternative, addressed in the Draft EIS, was developed to avoid privately owned farmland and to avoid lands with wilderness characteristics. Malheur S Alternative crosses Bully Creek at the beginning of Segment 5 traveling to south where the route crosses Malheur Canyon and U.S. Highway 20 into Sand Hollow. North of Grassy Mountain, this alternative turns to the southeast to cross the Owyhee River in the Owyhee River Below the Dam Area of Critical Environmental Concern (ACEC) and a portion suitable for wild and scenic designation, north of an existing 500-kV transmission line 2.5 miles north of the Owyhee Dam. The transmission line would continue to parallel the existing 500-kV transmission line to the southeast to the end of Segment 5 near Succor Creek approximately 3 miles west of the Oregon-Idaho border.

MALHEUR A ALTERNATIVE [LINKS 5-1, 5-5, 5-25, 5-35; 43.1 MILES]

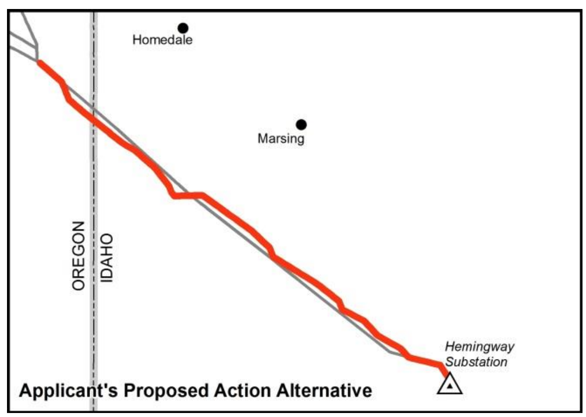


The Malheur A Alternative, addressed in the Draft EIS, was developed to be within or parallel the West-wide Energy Corridor in the vicinity of the Owyhee Dam. Malheur A Alternative crosses Bully Creek at the beginning of Segment 5 traveling to south where the route crosses Malheur Canyon and U.S. Highway 20 into Sand Hollow. North of Grassy Mountain, this alternative turns to the southeast to cross the Owyhee River, in the Owyhee River Below the Dam ACEC and a portion suitable for wild and scenic designation, south of an existing 500-kV transmission line 1.5 miles north of the Owyhee Dam. The transmission line would continue to parallel the existing 500-kV transmission line to the southeast to the end of Segment 5 near Succor Creek approximately 3 miles west of the Oregon-Idaho border.

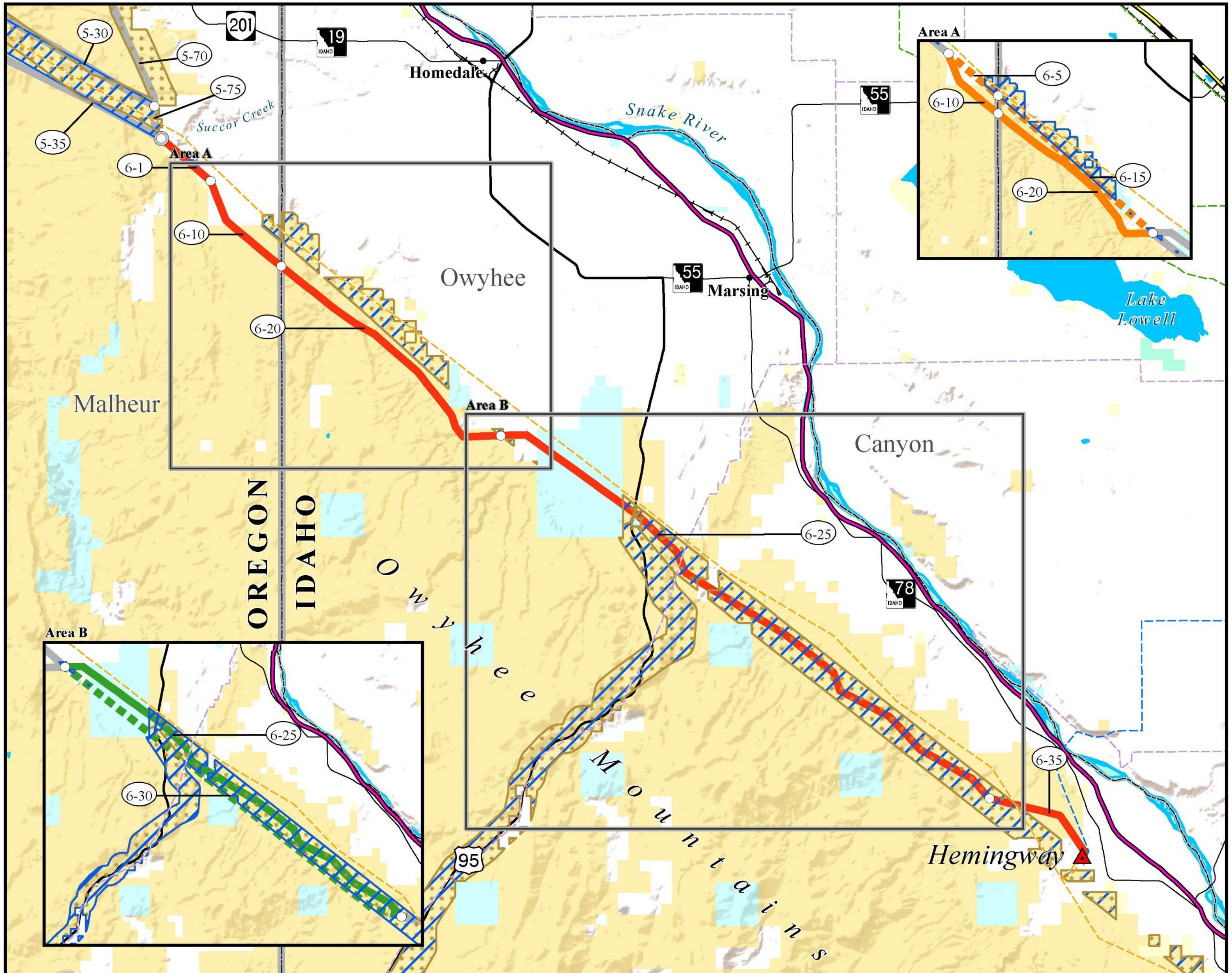
2.5.2.6 SEGMENT 6—TREASURE VALLEY

Segment 6 begins at a point approximately 3 miles west of the Oregon-Idaho border and ends at the Hemingway Substation in Owyhee County, Idaho. The one route and two areas of local route variations in Segment 6 are shown on Map 2-7f.

APPLICANT'S PROPOSED ACTION ALTERNATIVE [LINKS 6-1, 6-10, 6-20, 6-25, 6-35; 28.0 MILES]



The Applicant's Proposed Action Alternative in Segment 6, addressed in the Draft EIS, begins near Succor Creek, approximately 3 miles west of the Oregon-Idaho border, traveling to the southeast into Idaho adjacent to an existing 500-kV transmission line, along the northwestern flank of the Owyhee Mountains. This route is located northeast of Jump Creek Canyon ACEC and further to the southeast is located within a designated West-wide Energy Corridor, crossing U.S. Highway 95 and Reynolds Creek before entering the existing Hemingway Substation 7 miles west of the community of Melba, Idaho.



Map 2-7f

Segment 6
Treasure Valley

BOARDMAN TO HEMINGWAY
TRANSMISSION LINE PROJECT

Alternative Routes[1, 2]

Applicant's Proposed Action Alternative

Variations

AREA A
Variation S6-A1
Variation S6-A2

AREA B
Variation S6-B1
Variation S6-B2

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
State Highway
West-wide Energy Corridor
Lake or Reservoir
500-kV Transmission Line
State Boundary
230-kV Transmission Line
County Boundary
138-kV Transmission Line
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

0 2.5 5
Miles
1:150,000 or 1 inch = 2 miles

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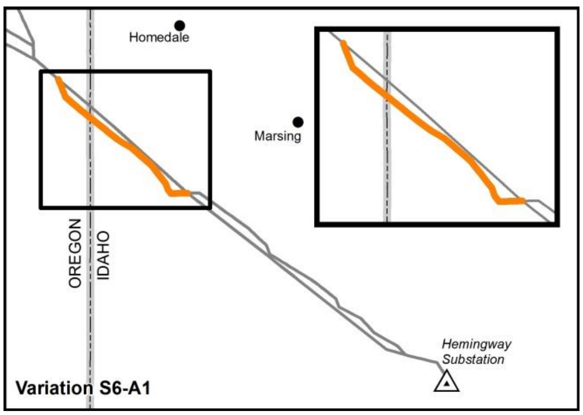
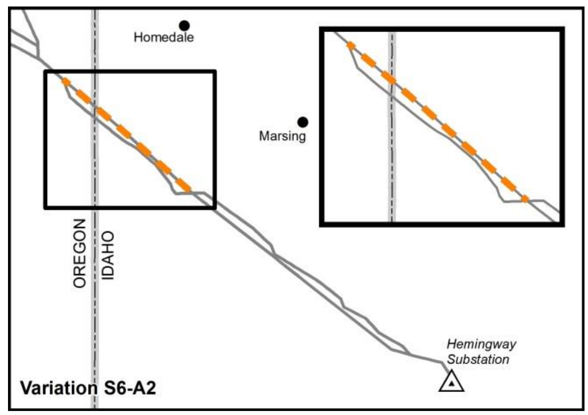
Variation S6 Area A

The BLM developed the variations as part of colocating the proposed transmission line to existing transmission lines in the area and to use the utility corridor designated on BLM-administered land more efficiently.

Variation S6-A1 (Links 6-10, 6-20; 9.3 miles) is the alignment of the Applicant's Proposed Action Alternative from Succor Creek, crossing the Oregon-Idaho border, to Jump Creek for a total distance of 9 miles in proximity to the existing 500-kV transmission line.

Variation S6-A2 (Links 6-5, 6-15; 8.9 miles) was developed between the Draft and Final EIS by the BLM.. Variation S6-A2 separates from the Applicant's Proposed Action Alternative at Succor Creek, to more closely parallel the existing 500-kV transmission line and to be located within the designated West-wide Energy Corridor to Jump Creek.

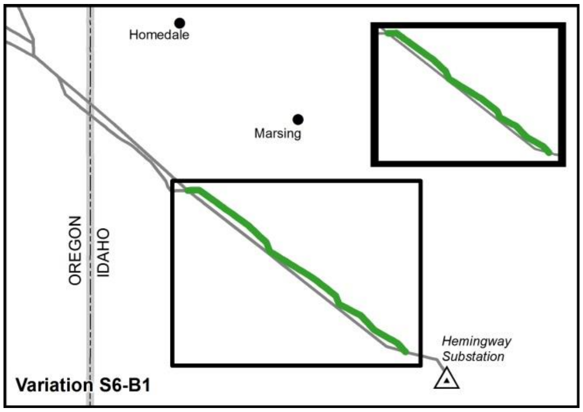


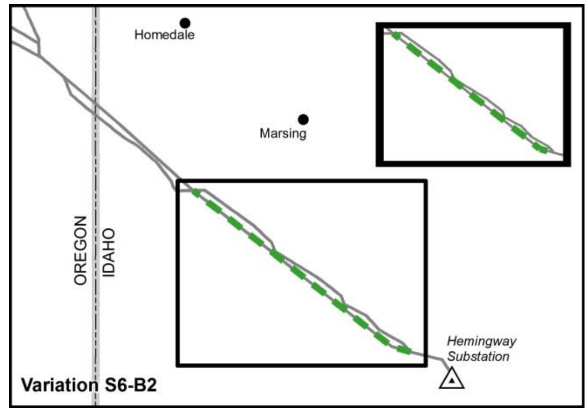


Variation S6 Area B

Variation S6-B1 (Link 6-25; 14.4 miles) is the alignment of the Applicant's Proposed Action Alternative from Jump Creek to Wilson Creek, 2.5 miles northwest of the existing Hemingway Substation, for a total distance of 14 miles. This route more closely parallels the existing 500-kV transmission line in the designated West-wide Energy Corridor.

Variation S6-B2 (Link 6-30; 14.1 miles) was developed between the Draft and Final EIS by the BLM. Variation S6-B2 separates from the Applicant's Proposed Action Alternative at Jump Creek and crosses in proximity to the Jump Creek Canyon ACEC than Variation S6-B1 traveling to the southeast for 14 miles to Wilson Creek, 2.5 miles northwest of the existing Hemingway Substation. This route is not located as close to the existing 500-kV transmission line as Variation S6-B1 since it is located along the southwest edge of the West-wide Energy Corridor to allow for future linear utilities to be sited between the proposed and the existing transmission lines.





2.5.3 No Action Alternative

The Council on Environmental Quality regulations require that EISs describe a "no action" alternative to a proposed action (40 CFR 1502.14(d)). The No Action Alternative describes the reasonably foreseeable outcome that would result from denying the Applicant's requests 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 and the USFS would not authorize a special-use permit for the B2H Project 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 (as described in Section 1.4, Idaho Power's Objectives for the B2H Project), 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 and demonstrates the consequences of not granting the right-of-way and authorizing special use.

CITY OF LA GRANDE

THE HUB OF NORTHEASTERN OREGON

MEMORANDUM

TO: Kellen Tardaewether
Oregon Department of Energy
550 Capitol St. N.E., 1st Floor
Salem, OR 97301

FROM: Robert A. Strope, City Manager
City of La Grande, Oregon
P.O. Box 670
1000 Adams Avenue
La Grande, OR 97850
(541) 962-1309
rstrope@cityoflagrande.org

DATE: April 27, 2018

RE: Idaho Power Responses to City of La Grande Comments on the Amended Preliminary Application for Site Certification for the Boardman to Hemingway Transmission Line

General Comments: The La Grande City Council renews our objection to the Proposed Route in the preliminary application and again strongly requests that Idaho Power remove the Proposed Route from their application and instead use the Morgan Lake Alternative or ideally reconsider the BLM preferred route. As we stated previously, of the two routes identified in the application, the applicant selected the one most impactful to the City of La Grande as their Proposed Route. In their response Idaho Power states they intend to construct on the route that has the most support from the local community. The local community does not support the B2H project as evidenced by the overwhelming adverse public response each time the topic is on an agenda. Therefore Idaho Power is unlikely to get community support for any route as it will be perceived as support for the project. Perhaps another way to put it, the La Grande City Council, which represents over the more than 13,000 residents who are in closest proximity to B2H, has stated they object more to the Proposed Route than the Morgan Lake Alternative. This should be more than sufficient for Idaho Power to remove the Proposed Route from their application.

The City of La Grande is disappointed that the Idaho Power response to our comments repeatedly reference a lack of specific deficiencies given one of the main points we and other jurisdictions have made is the preliminary application itself does not provide sufficient information in many areas to adequately review what they are proposing to construct as we would with a normal land use application that had detailed site plans.

Given the lack of detail contained in the preliminary application, we would ask that conditions of approval be included to protect the City's interests and avoid any disputes in the future should the project be approved. Some specific conditions we are requesting are shown in bold in the following paragraphs. Idaho Power could also revise their application to include these to streamline the process.

Below are additional comments regarding the Idaho Power response:

Exhibit T – Recreation.

View Shed Concerns of Morgan Lake Park with respect to possible impacts of B2H power line construction in close proximity to the park:
Despite the detailed information provided by Dr. Karen Antell, PhD, Professor of Biology, Eastern Oregon University in our previous submission, Idaho Power's states that we have not provided evidence of impacts the line may have on Morgan Lake. It is difficult to be more precise on impacts given the lack of detail in the Idaho Power preliminary application that we pointed out. Their submission lacks details regarding how they plan to access the line during construction, the types and quantities of equipment that will travel up Morgan Lake Road during construction. Idaho Power's staff acknowledged during public meetings that the towers would be an impact on the view shed but that people would get used to it over time. We would ask that Idaho Power be required to provide evidence that such a project does not adversely impact an amenity such as Morgan Lake. Another option would be for Idaho Power to consider physical improvements at Morgan Lake to enhance the recreational experience and help offset the view shed impacts.

At a minimum, the City would ask that if the project is approved, a condition of approval would include that for the approximately 1.5 miles of the line that would be in view from Morgan Lake that H Frame towers be used to help mitigate the adverse impact to the view shed. If the Proposed Route is selected instead of the Morgan Lake Alternative, a condition of approval should be added to require H Frame towers in the view shed visible from the City of La Grande. Again, the City of La Grande adamantly opposes the Proposed Route and would ask Idaho Power to remove it from their application.

Exhibit U – Public Services include utilities such as road systems, water, sanitation services, power, and other amenities necessary for the construction.

If Morgan Lake Road will be used for construction access, for the safety of the public and Idaho Power's construction crews, the City of La Grande requests that a condition of approval be included to require Idaho Power to widen Morgan Lake Road to a standard 22 foot width from the end of the asphalt in the vicinity of 91 Walnut to the end of the road with guardrails from Skyline Drive to Marvin Road. Given the grade and winter conditions, asphalt would not be the preferred surface, but rather a minimum 6 inch thick rock and gravel surface using base rock from Harney Rock & Paving Company, Haines, Oregon, which has proven to be ideally suited to the existing conditions on this road. **If Glass Hill will be used for construction access, it would also need to be improved to these same standards with the addition of improving the intersection of Glass Hill and Morgan Lake Road to allow for left turns from Glass Hill onto Morgan Lake Road.** Glass Hill would not require guard rails. Soil stabilization, slide areas, and improved drainage will be required to be addressed as part of needed improvements to accommodate construction traffic, as well as the use of Mag Chloride for dust control and to aid in the stabilization. Union County Public Works can provide more detailed information regarding the standards.

Route for construction traffic, both proposed and Morgan Lake Alternative: **If the project is approved, in addition to the actions Idaho Power stated they would be taking regarding traffic, the City would ask that as a condition of approval Idaho Power will use the following route: From Highway 30 to Gekeler Lane to C Avenue to Walnut Street to Morgan Lake Road to Glass Hill Road. Further, that prior to the start of construction, the section of C Avenue from the intersection of C Avenue and Sunset and the section of Walnut from Morgan Lake Road to C Avenue be improved to City of La Grande Class I standards to accommodate the construction traffic and restored if needed upon completion of the project. Also, that Idaho Power be required as a condition of approval to repair any damage resulting from their vehicles and equipment that occur during construction and that upon completion of construction all infrastructure be restore to as good or better than it was prior to construction.**

Topic or Keyword: Maps

STAFF'S DATA REQUEST NO. 56.

Please provide an ArcGIS Pro exported map pdf version which includes all PDF layers and attributes for more granular geographic examination of map features for the portions of the B2H transmission line that passes within a 10-mile radius of residential areas and critical facilities (e.g., hospitals, schools).

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 56.

As discussed with Staff on December 15, 2022, please see Attachment 1 for a Google Earth kmz file and Attachment 2 for the ArcGIS layer package that includes the proposed route as modified by the West of Bombing Range Road Alternative 1 and the Morgan Lake Alternative route, the route for which Idaho Power is asking for the Certificate of Public Convenience and Necessity, as well as the complete site boundary approved in the Energy Facility Siting Council ("EFSC") certificate.

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 22:

Ref: Idaho Power Company's (IPC) Petition filed Sep. 30. p-11. Please provide summaries of both Oregon and Idaho Public Utility Commissions' Orders on inclusion of B2H in the preferred portfolio and action items related to B2H from all IRPs filed since the recognition of this resource in IPC's Integrated Resource Plans. Please have them categorized by year and Order No.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 22:

OREGON IRP's

2009 IRP
LC 50
Order No. 10-392

The Commission's comments regarding Boardman to Hemingway ("B2H") and/or the Preferred Portfolio in its Discussion and subsequent resolutions are as follows:

Preferred Portfolio for the First Ten-Year Planning Period and the Boardman to Hemingway Transmission Project
As Staff notes, the dearth of recent transmission development and the case specific nature of any transmission project make it difficult to vet key assumptions that will determine the cost to Idaho Power's retail customers of the B2H Project. But our concern about this uncertainty is tempered by risk analyses showing that the "B2H portfolio" (Portfolio 1-4) is the best portfolio for customers over a range of capital costs and third-party subscription levels. Accordingly, we consider it reasonable to proceed with the B2H Project based on the information available now and acknowledge it as part of the Company's 2009 IRP.

We also adopt Staff's recommendation that Idaho Power be required to update its B2H Project assumptions (for example, construction cost estimates, equity partnership estimates, third-party subscription estimates, and wheeling revenues) in its 2011 IRP. We always expect utilities to update their assessments of previously acknowledged projects that are still in the planning or development stages at the time of an IRP acknowledgement. We make this updating requirement explicit for the B2H Project because of current uncertainty about underlying assumptions. We expect the Company to provide a thorough update of its B2H Project assumptions and its risk analysis in the 2011 IRP, with the understanding that the Commission's acknowledgment of the 2011 IRP will depend on the outcome of that updated analysis.

Finally, we reiterate that at the time of ratemaking any utility is required to show that its investment was a prudent decision. Given the inherent risk associated with a transmission facility and the possibility of escalating costs and delays in permitting, the Company will need to address any significant changes in construction cost, equity partnership, or expected third-party subscription and how these factors influenced the Company's decision to continue with the project.

Preferred Portfolio for the Second Ten-Year Planning Period and the Consolidated Preferred Portfolio
We support Idaho Power's selection of Portfolio 2-4 for the second ten-year planning period and the overall selection of the Preferred Portfolio. While we recognize the speculative nature of the second half of the planning period, we agree with Staff's conclusion that much can be learned from analyzing more portfolios and resource options. We therefore adopt Staff's recommendation and direct the Company to consider more portfolios, including those needed to evaluate the benefits of a CCCT versus a SCCT, in its next IRP cycle. We also direct the Company to include an analysis of potential EPA or other federal and state environmental policies that may affect Idaho Power's generation portfolio.

The Commission ultimately concluded the following:
We acknowledge Idaho Power's 2009 IRP and its preferred portfolio as presenting the best combination of expected costs and associated risks and uncertainties for the Company and its customers, and as satisfying the procedural and substantive requirements of this Commission. At the same time, we recognize that the assumptions for several key factors remain uncertain. For this reason, we require that Idaho Power perform further analyses in its 2011 IRP consistent with our discussion below.

2011 IRP
LC 53
Order No. 12-177

The Commission's comments regarding B2H and/or the Preferred Portfolio in its Discussion and subsequent resolutions are as follows:

Boardman to Hemingway Transmission (Action Item 7)
We share CUB's concern that coal cost study results will have implications for Idaho Power's transmission line use and plans but acknowledge Action Item 7 requiring the company to continue to make progress on the B2H transmission project as an uncommitted resource.

2013 IRP
LC 58
Order No. 14-253

The Commission's comments regarding B2H and/or the Preferred Portfolio in its Discussion and subsequent resolutions are as follows:

Boardman to Hemingway
We acknowledge ongoing permitting, planning studies, and regulatory filings for B2H. As Staff notes, the analysis in the IRP supports these planned near-term activities. We anticipate additional analysis regarding B2H in Idaho Power's 2015 IRP before acknowledging other actions related to B2H.

We decline to acknowledge completion of B2H because it is well beyond the two-to-four-year period for action items specified by the IRP Guidelines. Further, we disagree with any suggestion that declining to acknowledge the construction of B2H is inconsistent with our previous acknowledgment of certain activities (e.g., permitting) related to this resource or inconsistent with previous orders acknowledging IRPs based on a preferred portfolio that includes B2H. Our acknowledgment of an IRP is based on our conclusion that it complies with our guidelines and that the plan seems reasonable based on information known at the time.

The Commission ultimately concluded the following:
We conclude Idaho Power satisfies all the procedural guidelines and all but one of the substantive guidelines for IRP planning. Idaho Power did not comply with the IRP Guideline regarding flexible capacity adopted in Order No 12-013.

We acknowledge the short-term action items in Idaho Power's Action Plan, except for the investment in selective catalytic reduction emissions technology at Jim Bridger Units 3 and 4. In addition, we acknowledge two additional action items recommended by Staff that relate to energy efficiency. We do not acknowledge the remaining action items, which are for the most part outside the two-to-four-year action plan period.

2015 IRP
LC 63
Order No. 16-160

The Commission did not provide additional comment beyond what was contained in Staff's memo and only noted in Appendix B of Order No. 16-160 that Action Item 1: B2H Transmission - Ongoing permitting, planning studies, and regulatory filings was acknowledged.

The Commission ultimately concluded the following:
This order memorializes our decision made at the March 24, 2016, Special Public Meeting regarding Idaho Power Company's 2015 Integrated Resource Plan (IRP). At the meeting, we adopted Commission Staff's recommendation to acknowledge Idaho Power's 2015 IRP, as revised by Staffs presentation during the meeting. As we stated at the close of the meeting, our decision to not acknowledge certain action items was based on procedural reasons rather than the merits of the action items.

2017 IRP
LC 68
Order No. 18-176

The Commission's comments regarding B2H and/or the Preferred Portfolio in its Discussion and subsequent resolutions are as follows:

<u>B2H Transmission Project</u>
We acknowledge B2H Action Item 5 to conduct ongoing permitting, planning studies, and regulatory filings for the B2H transmission line, as well as Action Item 6 to conduct preliminary construction activities, acquire long-lead materials, and construct the B2H project. We clarify that this determination is limited to our IRP standards and that, in acknowledging these action items, we do not interpret or apply the standards of any other state or federal agency. Through our acknowledgement we find that these action items are reasonable components of Idaho Power's resource plan based on the information available at this time.

Our acknowledgement of Action Item 6 is based on our finding of its reasonableness, according to the information we possess today, in the context of Idaho Power's entire IRP. Our decision does not mean that Action Item 6 is the only possible option for meeting Idaho Power's resource needs, simply means that we are satisfied that it is the least cost, least risk resource for meeting the demonstrated resource needs of Idaho Power's customers. We recognize that there may be other ways of meeting the capacity needs identified in this IRP that may not have the same impacts to eastern Oregon as B2H. In this proceeding, however, we do not find that any such alternatives have been demonstrated to be lower cost and lower risk, based on the information presented.

Our acknowledgement of Action Item 6 is not a final determination of prudence and does not guarantee favorable ratemaking treatment. The IRP process is designed to provide the utility with guidance from Staff, stakeholders, and the Commission based on the utility's submitted plan. We have long held that consistency with an acknowledged plan may be evidence in support of favorable ratemaking treatment, but the utility still must demonstrate that its actions remained reasonable, particularly in light of any material changes in the facts, circumstances and assumptions that supported IRP acknowledgment.

We are encouraged by the extensive participation of citizens in this case, many of which are motivated by sincere concerns over impacts to the land which will be created by this project. We are bound by state laws and legal precedent that directs us to exclude from our inquiry many of these concerns however, and we note that energy facility siting impact issues are appropriately reviewed in other state or federal proceedings.

Our decision is supported by the fact that B2H has been prioritized over multiple portfolios in different IRPs using numerous different modeling concepts and reflecting many different assumptions. While presence in numerous IRPs is not determinative for our acknowledgement judgement, it is indicative to us of sustained value that has remained robust across industry and market changes to date. In each of these portfolios, B2H has proven to be a low-cost resource that provides considerable value to the system. While we are sensitive to the arguments that the utility industry is in flux, and that technological changes are impacting the system in unanticipated ways, we have not seen information presented as part of this IRP process indicating that large-scale transmission resources will not be an important part of future utility systems. We recognize that B2H has the potential to create significant regional benefits and could represent a tool for allocating and moving a diverse set of new low-carbon resources across the west.

Transmission must be developed with very long lead times. Because circumstances may change in the future, and new information may be presented at a later date, the ultimate development of the B2H project is not a foregone conclusion. We agree with Staff that a host of changed circumstances could require Idaho Power to reevaluate its course, including but not limited to significant changes in co-participant shares and commitments, project costs, load needs, power market liquidity and depth, and capabilities and costs of alternative technologies. Idaho Power should be prepared for such reevaluation and to change course should such information or circumstances emerge.

Based on what we know today, however, we find that the plan to construct the B2H project is reasonable and should be acknowledged subject to the conditions outlined in Staff s memo.

The Commission ultimately concluded the following:
We acknowledge all but two of the action items proposed in Idaho Power's revised action plan. Although our acknowledgement includes Idaho Power's Boardman to Hemingway (B2H) related action items, we note that our acknowledgement is limited to our interpretation of IRP standards

specific to the Public Utility Commission and does not interpret or apply the standard of any other state or federal agency.

2019 IRP
LC 74
Order No. 21-184

The Commission's comments regarding B2H and/or the Preferred Portfolio in its Discussion and subsequent resolutions are as follows:

Boardman to Hemmingway (B2H) Transmission Line Action Plan Items
We acknowledge action items nos. 3 and 4, regarding the Boardman to Hemingway (B2H) project. By doing so, we find that these action items related to B2H are reasonable at this time and for this IRP, given the information developed through our IRP processes. We agree with Staff that a cost contingency for the project is necessary, and that developing an appropriate contingency is an important and standard part of consideration of a resource of this character. In response to comments for clarification from STOP B2H, we will allow the 2017 IRP Order to speak for itself. We affirm here that we acknowledge the B2H project action items in this IRP, which are applicable to the proposed project as it is presented in the company's Second Amended 2019 IRP, which includes a 500 kV transmission line with the partnership arrangement as described by Idaho Power.

In coming to this conclusion, we have reviewed Idaho Power's Second Amended 2019 IRP and Staff's analysis and recommendations, the filed comments of all stakeholders, and all of the comments submitted by individual commenters. We have also engaged with stakeholders and the public during public meetings and workshops and consider these inputs fully and carefully in our decision-making process. We have received many comments from members of the public, and we very much appreciate the time and effort required to engage with our processes.

Many commenters lament the impacts that this project is expected to create on the landscape and to their communities. We take these comments seriously, and they help inform us about the risks and impacts of the proposed project. Ultimately, we make a determination on the reasonableness of Idaho Power's plan to serve customers with the B2H project; we do not review or expressly weigh the impacts to communities that this project or resource selections broadly may present, as opposed to the land and community impacts of other options for serving customers. We have considered and will continue to consider the risks of the project described by public commenters that are relevant to our least-cost, least-risk review standards, and we consider the opposition to the line as relevant to informing us about the risks of cost overruns, or potential barriers that Idaho Power may face in seeking to construct the project. For all proposed resource solutions, however, the direct consideration of questions regarding local impacts are addressed in forums other than our IRP process.

Our acknowledgment means that the action plan items pertaining to this project, as currently presented, meet our guidelines of least-cost, least-risk planning for customers. We emphasize it is not a determination of the prudency of the overall project, nor are we granting Idaho Power cost recovery for any portion of the B2H project as proposed at this time. A prudency review and ratemaking decisions will occur in future proceedings, at such times as those determinations are required. As described by Idaho Power in its Second Amended 2019 IRP, the activities and actions that move the B2H project forward will continue to require ongoing analysis in future IRPs and other proceedings. Those future proceedings can and will involve continued review and analysis of the B2H project and will continue to test the assumptions and projections that justify the proposed actions.

We note that, in general, the analysis presented supports the project. The project is reasonably modeled, meaning that core assumptions underlying the analysis such as projected market prices, capacity needs, and resource costs have been tested by stakeholders and fall within a reasonable range. In multiple scenarios, the B2H project remains cost-competitive, even in scenarios where fundamentals not favorable to the project are tested, such as where the cost contingency is triggered and under a variety wholesale energy cost estimates. Throughout these scenarios, Idaho Power has demonstrated that the project is reasonable, and given the information available today, the projected least-cost, least-risk option. We recognize the scale of this project and understand the potential impacts to Oregon, including the communities and lands that will be most impacted by the project.

We recognize the uncertainties surrounding this project, including cost, cost risks, partnerships, and market depth. We also recognize that these risks and uncertainties must be evaluated in a context of potentially significant opportunities and benefits, including enabling better regional integration of low-cost renewables, allowing clean energy goals to be met at a lower cost to consumers, advancing regional reliability, and avoiding the need to meet large-scale capacity needs with new fossil fuel infrastructure that is at risk of being economically stranded.

We find that Idaho Power's analysis of the project in its IRP comports with our established guidelines and is reasonable, even though we recognize there are still questions to be answered and that future developments, yet to occur, will continue to be reviewed. Below, we review these issues and emphasize at the conclusion of this resolution that we expect the company to produce updated and ongoing analysis to address these issues in the 2021 IRP.

First, cost overruns are a matter of significant concern, as they often are with large, complex resource solutions. Idaho Power must continue to stress test this project aggressively as a part of the preferred portfolio. Idaho Power's stress testing must build in potential costs and cost contingencies that arise with concerns on the landscape, wildfire, and property risks. Typically, construction cost contingencies narrow as the project reaches completion. However, given the substantial size of this project, Idaho Power must keep the range of cost uncertainty reasonably wide in its modeling exercises and contingency planning. We agree with Staff that Idaho Power's cost contingency should not be removed. We agree that incorporating a reasonable cost contingency is standard practice that helps prepare for the risk of cost overruns and is valuable during the modeling process. We decline to determine that 20 percent is the appropriate cost contingency but expect Idaho Power to explain and support the cost contingency assigned to this project in the 2021 IRP.
Second, the specific partnership structure of the project remains unresolved. Idaho Power states that BPA remains committed to the project and that its 21 percent share of the project is still appropriate. The company further states that it will not shift additional costs to retail customers without an increased and corresponding benefit for those customers. Idaho Power states that ownership details will be finalized and presented in its 2021 IRP. Partnerships are vital to the project's future success and will need to be closely monitored. Partnership agreements bring complexity to the project and Idaho Power must continue to evaluate the risks to customers that result from these arrangements. We expect Idaho Power to analyze closely whether expanding its ownership share from 21 percent and relying on OATT revenues to offset its additional costs is truly comparable, in terms of risks and financial impacts, to joint

ownership. Where differences may exist, we expect that Idaho Power will explain how those risks are mitigated or considered in its analyses.

Stakeholders have questioned the availability of market resources over the long term, particularly given regional resource adequacy needs. We note that Idaho Power's market needs are centered in the early summer months, driven by irrigation use, which is distinguishable from the broader current resource adequacy needs in the region, and supports the conclusion that market resources will be available to meet Idaho Power's needs, based on the best information available today. Idaho Power's modeling has also consistently demonstrated that it saves money to retire coal and replace it with a blend of renewables and transmission that connects customers to markets and brings low-cost economics to the table. Nonetheless, as market conditions and availability are central to the success of this project as a resource, they must continue to be reviewed and tested.

In addition to market dynamics, project costs must be consistently updated as Idaho Power moves forward with this project. STOP B2H recommends, and Staff agrees, that Idaho Power should update its estimated costs prior to submitting its 2021 IRP. Idaho Power states that it plans to update its estimated project costs in the next IRP and has hired a consultant to assist.

We would specifically like to see cost updates explicitly account for design changes for operating the line in a mid-century climate, particularly accounting for the changing understanding of wildfire risks by mid-century. We plan to continue to analyze new information regarding this wildfire issue as it becomes available and expect the uncertainties surrounding this and other risks to be resolved as the company continues its own evaluation, development and refinement of applicable action plan items. These issues, and the many estimates, details, and analyses will continue to be monitored and evaluated in the next IRP, which the company states will be filed no later than the end of this year.

We note that our acknowledgment is limited to our interpretation of IRP standards specific to the Oregon Public Utility Commission and does not interpret or apply the standard of any other state or federal agency.

The Commission ultimately concluded the following:
We acknowledge all action items proposed in Idaho Power's revised action plan with the exception of the items discussed below. In addition, we adopt many of Staff's additional recommendations, modifying some action items as described in Staff's report, most of which are applicable to Idaho Power's forthcoming 2021 IRP.

We acknowledge Idaho Power's Boardman to Hemingway (B2H) transmission project action items, as we also did in Idaho Power's 2017 IRP.

2021 IRP
LC 78
Pending Commission Approval

Idaho Power will supplement this response when an order is received.

IDAHO IRP's

2009 IRP
IPC-E-09-33
Order No. 32042

The Commission made no specific comments in its Findings and Decisions on the preferred portfolio, which included B2H, but concluded the following: The Commission has reviewed and considered Idaho Power s 2009 electric Integrated Resource Plan filing in Case No. IPC- 09-33 and the related appendices. We have also considered the comments and recommendations of the Renewable Northwest Project (RNP), the Snake River Alliance, the Idaho Conservation League, Commission Staff and Company customers. We find that the Company's IRP contains the necessary information and is in the appropriate format as directed by Order No. 22299.

2011 IRP
IPC-E-11-11
Order No. 32425

The Commission made no specific comments in its Findings and Decisions on the preferred portfolio, which included B2H, but concluded the following: The Commission has reviewed and considered Idaho Power's 2011 Integrated Resource Plan, including the related appendices, filed in Case No. IPC-E-11-11. We have considered the written comments and recommendations as well filed by the Power County and Cassia County Commissioners, the Idaho Conservation League, the Renewable Northwest Project, the Snake River Alliance, the Commission Staff, and the members of the public. The Commission finds the Company's IRP contains the necessary information and is in the appropriate format as directed by Order No. 22299.

2013 IRP
IPC-E-13-15
Order No. 32980

The Commission made no specific comments in its Findings and Decisions on the preferred portfolio, which included B2H, but concluded the following: The Commission has reviewed the filings in this case, including the 2013 IRP, the comments, and the Company's reply. Based on that review, the Commission finds that the Company's 2013 IRP contains the required information and is in the appropriate format as established in Commission Order Nos. 22299 and 25260. Accordingly, we find it reasonable to accept the Company's 2013 IRP. As always, our acceptance of the Company's 2013 IRP should not be interpreted as an endorsement of any particular element of the plan or of any proposed resource acquisition contained in the plan. An IRP is a utility planning document that incorporates many assumptions and projections at a specific point in time. By accepting the Company's filing, we acknowledge only the Company's ongoing planning process, not the conclusions or results reached through that process.

2015 IRP
IPC-E-15-19
Order No. 33441

The Commission's only comment regarding B2H and/or the Preferred Portfolio in its Findings and Decisions stated that "It would also be appropriate for the Company to update stakeholders about the status of B2H, participation in an EIM, solar PV cost estimates, and the penetration of electric vehicles and their impact on the Company's load as the 2017 IRP is being developed."

The Commission ultimately concluded the following:
Having reviewed the record in this case, we find that the Company's 2015 IRP satisfies the requirements set forth in the Commission's prior Orders. We thus acknowledge that the Company has filed the 2015 IRP. In doing so, we reiterate that an IRP is a working document that incorporates many assumptions and projections at a specific point in time. It is a plan, not a blueprint, and by issuing this Order we merely acknowledge the Company's ongoing planning process, not the conclusions or results reached through that process. With this Order, the Commission is not approving the IRP or any resource acquisitions referenced in it, endorsing any particular element in it, or opining on the prudency of the Company's decision to select its preferred resource portfolio. The appropriate place to determine the prudence of the IRP or the Company's decision to follow or not follow it, and the validation of predicted performance under the IRP, will be a general rate case or another proceeding in which the issue is noticed.

2017 IRP
IPC-E-17-11
Order No. 33983

The Commission's comments regarding B2H and/or the Preferred Portfolio in its Findings and Decisions are as follows:

1. We recognize the participants' valid viewpoints and commentary as they relate to the Company's preferred portfolio decision(s), forecasting, B2H and SCR. We encourage the Company to seriously contemplate the comments in this case as it undertakes its planning for the 2019 IRP.

2. We again encourage the Company to use its IRPAC meetings and other outreach opportunities to continue to explore issues raised in this case. The Company must maintain transparency and openness in its planning, with an eye toward including all reasonably foreseeable potential resource outcomes. We expect the Company to actively consider the concerns raised in this case as it plans, and to continue evaluating all resource options and the best interests of its customers when developing the 2019 IRP.

The Commission ultimately concluded the following:
Having reviewed the record, we find that the Company's 2017 Electric IRP satisfies the requirements in the Commission's prior orders. We thus acknowledge that the Company has filed the 2017 Electric IRP. In doing so, we reiterate that an IRP is a working document that incorporates many assumptions and projections at a specific point in time. It is a plan, not a blueprint, and by issuing this Order we merely acknowledge the Company's ongoing planning process, not the conclusions or results reached through that process.

With this Order, the Commission is not approving the IRP or any resource acquisitions referenced in it, endorsing any particular element in it, opining on the Company's prudence in selecting the IRP's preferred resource portfolio, or allowing or approving any form of cost recovery. The appropriate place to determine the prudency of the IRP or the Company's decision to follow or not follow it, and the validation of predicted performance under the IRP, is a general rate case or other proceeding where the issue is noticed.

2019 IRP
IPC-E-19-19
Order No. 34959

The Commission's only comment regarding B2H and/or the Preferred Portfolio in its Findings and Decisions was in regard to expectations for topics to be covered in the 2021 IRPAC meetings: "B2H partnership status and demonstrating market availability at Mid-C should continue to be areas of focus."

The Commission ultimately concluded the following:
Having reviewed the record, we find that Idaho Power's Second Amended 2019 Electric IRP satisfies the requirements in the Commission's prior orders. We thus acknowledge that Idaho Power has filed the Second Amended 2019 Electric IRP. In doing so, we reiterate that an IRP is a working document that incorporates many assumptions and projections at a specific point in time. It is a plan, not a blueprint, and by issuing this Order we merely acknowledge Idaho Power's ongoing planning process, not the conclusions or results reached through that process. With this Order, the Commission does not approve the IRP or any resource acquisitions referenced in it, endorse any particular element in it, opine on Idaho Power's prudence in selecting the IRP's preferred resource portfolio, or allow or approve any form of cost recovery. The appropriate place to determine the prudency of the IRP or Idaho Power's decision to follow or not follow it, and the validation of predicted performance under the IRP, is a general rate case or other proceeding where the issue is noticed.

2021 IRP
IPC-E-21-43
Pending Commission Approval

Idaho Power will supplement this response when an order is received.

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 22:

Ref: Idaho Power Company's (IPC) Petition filed Sep. 30. p-11. Please provide summaries of both Oregon and Idaho Public Utility Commissions' Orders on inclusion of B2H in the preferred portfolio and action items related to B2H from all IRPs filed since the recognition of this resource in IPC's Integrated Resource Plans. Please have them categorized by year and Order No.

IDAHO POWER COMPANY'S SUPPLEMENTAL RESPONSE TO STAFF'S DATA REQUEST NO. 22:

Idaho Power is supplementing this response following the issuance on November 18, 2022, by the Idaho Public Utilities Commission of an order regarding the Company's 2021 IRP.

2021 IRP
IPC-E-21-43
Order No. 35603

The Commission made no specific comments in its Findings and Decisions on the preferred portfolio, which included B2H, but concluded the following:
Having reviewed the record, we find that Idaho Power's 2021 Electric IRP satisfies the requirements in the Commission's prior orders. We thus acknowledge that Idaho Power has filed the 2021 IRP. In doing so, we once again reiterate that an IRP is a working document that incorporates many assumptions and projections at a specific point in time. It is a plan, not a blueprint, and by issuing this Order we merely acknowledge Idaho Power's ongoing planning process, not the conclusions or results reached through that process. With this Order the Commission does not approve the IRP or any resource acquisitions referenced in it, endorse any particular element in it, opine on Idaho Power's prudence in selecting the IRP's preferred resource portfolio, nor allow or approve any form of cost recovery. The appropriate place to determine the prudency of the IRP or Idaho Power's decision to follow or not follow it, and the validation of predicted performance under the IRP, is a general rate case or other proceeding where the issue is noticed.

The IRP planning process attempts to ensure that Idaho Power is well-positioned to meet the demands of a changing energy sector. While there are inherent limitations in trying to predict a multitude of conditions over the next 20 years, the planning process is worthwhile when Idaho Power strenuously evaluates model inputs, verifies the model logic, and collaborates with engaged stakeholders. Doing so helps ensure that Idaho Power can continue to provide reliable and economical service to its customers as the energy sector evolves.

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 26:

Please summarize how properties in the path of the transmission line are impacted and provide details on the intensity of this impact.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 26:

Properties directly in the path of the Boardman to Hemingway ("B2H" Project may experience direct impacts, indirect impacts, or both; and those impacts will vary depending on site-specific factors such as the type, location, and number of project features planned for the property and the type and scope of land use and/or vegetation/crops affected by the B2H Project. Direct impacts are defined as the impacts that will occur at the same, or in close proximity in, time and place as the B2H Project activities. Indirect impacts are the impacts that will occur later in time or in a different place than the B2H Project activities. Both direct and indirect impacts may be permanent or temporary.

Idaho Power addresses the B2H Project's potential impacts (direct, indirect, permanent, and temporary) in detail in its EFSC Application, which addresses impacts B2H Project-wide as well as on a property- or site-specific level for certain resources. The following EFSC Application exhibits, which are summarized below, describe the impacts most relevant to the properties in the path of the Project:

- Exhibit B, Project Description – Exhibit B describes the B2H Project's major components and related and supporting facilities, which includes transmission line towers, new access roads, improvements to existing access roads, communication stations, temporary construction areas such as multi-use areas and pulling and tensioning sites, and others. The impacts from the different B2H Project features varies, which Exhibit B helps to explain by setting forth the typical construction ground disturbance dimensions,[1] tower structure foundation excavation dimensions,[2] communication station dimensions,[3] access road disturbance dimensions,[4] pulling and tensioning site layouts,[5] approximate dimensions of the Project features,[6] and right-of-way widths.[7]
- Exhibit I, Soil Protection – Exhibit I describes the potential impacts on soils due to erosion, loss of soil reclamation potential, compaction, and chemical spills as well as potential impacts to productive soils.[8] Exhibit I also describes the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[9] The EFSC concluded—taking into

[1] See Attachment 1, ASC, Exhibit B, Table B-8.
[2] See Attachment 1, ASC, Exhibit B, Table B-10.
[3] See Attachment 1, ASC, Exhibit B, Figure B-26.
[4] See Attachment 1, ASC, Exhibit B, Table B-12.
[5] See Attachment 1, ASC, Exhibit B, Figure B-28.
[6] See Attachment 1, ASC, Exhibit B, Table B-13.
[7] See Attachment 1, ASC, Exhibit B at B-83 through B-84.
[8] See Attachment 2, ASC, Exhibit I at I-12 through I-23.
[9] See Attachment 2, ASC, Exhibit I at I-24 through I-32.

account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to soils.[10]

- Exhibit J, Waters of the State – Exhibit J discusses the potential impacts on streams, lakes, wetlands, and other "waters of this state." Exhibit J explains that, throughout the development of the B2H Project, Idaho Power has consistently made efforts to avoid and minimize impacts to such waters,[11] and as a result, permanent impacts across the entirety of the B2H Project will be less than ½ acre.[12]
- Exhibit K and the Agricultural Lands Assessment, Agricultural Practices – Exhibit K and the Agricultural Lands Assessment describe the current agricultural uses in the vicinity of the Project and the potential impacts of the Project on those uses, including dust impacts, loss or damage to standing crops if access is needed prior to harvest, temporary access restrictions for farm equipment and livestock during construction, temporary disturbances to irrigation equipment, temporary disruptions to farm practices during construction, loss of farmable acreage, soil compaction, damage to drainage systems, restricted range of irrigation systems, soil erosion, distribution of noxious weeds, movement of soil-borne pathogens, restrictions against tall crops and equipment under the transmission lines, safety issues, yield loss, impacts to use of aircraft, impacts to field burning, economic impacts, and others.[13] Exhibit K and the Agricultural Lands Assessment also describes the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[14]
- Exhibit K and the Right-of-Way Clearing Assessment, Forestry Practices – Exhibit K and the Right-of-Way Clearing Assessment describe the potential impacts of the Project on forestry practices, including: land on the corridor may need to be converted from forestry to agriculture; future timber harvesting operations of trees within a tree length of the power line will have a higher risk factor; there may be some loss in tree volume along the new edges of the power line corridor; the risk of wildfire may be increased; new roads may allow access to more area for authorized and unauthorized users of the land.[15] The Right-of-Way Clearing Assessment also describes the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[16]
- Exhibit L, Protected Areas – Exhibit L addresses the potential impacts on certain "protected areas," including national parks, national monuments, designated wilderness areas, wildlife refuges, state parks, and state wildlife areas.[17] In Exhibit L, Idaho Power provides analysis of the potential noise, traffic, water, visual, and other impacts to those

[10] EFSC, Final Order at 140, provided in the Company's Supplement to its Petition for Certificate of Public Convenience and Necessity.
[11] See Attachment 1 to the Company's Response to Standard Data Request No. 1, ASC, Exhibit J at J-15.
[12] See Attachment 1 to the Company's Response to Standard Data Request No. 1, ASC, Exhibit J at J-16.
[13] EFSC Final Order, Attachment K-1, Amendment Agricultural Lands Assessment at 16 through 35 (describing the potential impacts) and EFSC Application, Exhibit K, Table K-2 (showing the acres of potential temporary and permanent impacts to agricultural lands).
[14] EFSC Final Order, Attachment K-1, Amendment Agricultural Lands Assessment at 35 through 42; *see also* EFSC Application, Exhibit K at K-29 through 32.
[15] EFSC Final Order, Attachment K-2, Right-of-Way Clearing Assessment at 13 through 15; EFSC Application, Exhibit K at K-41 through K-43.
[16] EFSC Final Order, Attachment K-2, Right-of-Way Clearing Assessment at 16 through 21.
[17] See Attachment 3, ASC, Exhibit L, Table L-1 (providing a summary of the relevant protected areas).

areas.[18] The EFSC concluded—taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to protected areas.[19]

- Exhibits P1, P2, and P3 – Exhibits P1, P2, and P3 describe the potential impacts to fish and wildlife habitat, including direct and indirect impacts from vegetation clearing activities, vehicle collisions, and vehicle traffic.[20] Exhibits P1, P2, and P3 also explain the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[21] The EFSC concluded—taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to fish and wildlife habitat.[22]
- Exhibit R, Scenic Resources – Exhibit R addresses the potential visual impact on certain scenic or important resources.[23] The EFSC concluded—taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to any scenic resources.[24]
- Exhibit X, Noise – Exhibit X addresses the potential noise impacts on property owners, including residences.[25] The EFSC concluded—taking into account minimization and mitigation measures, and having found that the B2H Project warranted a variance and exception to the antidegradation standard—the B2H Project would otherwise comply with Oregon's Noise Control Regulations.[26]

[18] See Attachment 1, ASC, Exhibit L at L-5 through L-43.
[19] EFSC, Final Order at 326.
[20] See, e.g., ASC, Exhibit P1 at P1-41 through P1-86, provided as Attachment 3 to the Company's Response to Standard Data Request No. 15.
[21] See, e.g., ASC, Exhibit P1 at P1-86 through P1-89, provided as Attachment 3 to the Company's Response to Standard Data Request No. 15.
[22] EFSC, Final Order at 402, provided in the Company's Supplement to its Petition for Certificate of Public Convenience and Necessity.
[23] See Attachment 4, ASC, Exhibit R, Table L-1 (providing a list of relevant scenic resources identified as significant or important) and R-48 through R-117 (describing the impacts to the identified scenic resources).
[24] EFSC, Final Order at 464 through 465.
[25] See Attachment 5, ASC, Exhibit X at X-9 through X-54.
[26] EFSC, Final Order at 699 through 700.

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 27:

Please summarize how properties adjacent to the path of the transmission line are directly or indirectly impacted and provide detail on the nature and intensity of the impacts.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 27:

There will be properties that include access roads—new roads and/or improvements to existing roads—and that will be located outside the immediate path of the transmission line in order to connect the transmission line to the local county and state road systems. Those properties may experience direct and/or indirect impacts resulting from the access roads themselves as well as indirect impacts from any B2H Project features located on adjacent properties. Idaho Power addresses these and other potential impacts in detail in its EFSC Application.[1]

There will also be properties that do not include any B2H Project features but that may otherwise experience indirect impacts resulting from the transmission line and other B2H Project features located on adjacent properties. The nature and scope of those indirect impacts will vary, depending on site-specific factors such as the type, distance, and location of the B2H Project features on the neighboring properties. Again, Idaho Power addresses these and other potential impacts in detail in its EFSC Application with the most relevant exhibits summarized below:

- Exhibit X, Noise – Exhibit X address the potential noise impacts on property owners, including on property owners not directly impacted by the B2H Project.[2] The EFSC concluded—taking into account minimization and mitigation measures, and having found that the B2H Project warranted a variance and exception to the antidegradation standard—the B2H Project would comply with Oregon's Noise Control Regulations.[3]
- Exhibit K and the Agricultural Lands Assessment, Agricultural Practices – Exhibit K and the Agricultural Lands Assessment describe the potential impacts on agricultural uses, including indirect impacts that may impact properties adjacent to, but not directly impacted, by the Project such as dust impacts, temporary access restrictions for farm equipment and livestock during construction, distribution of noxious weeds, impacts to use of aircraft, impacts to field burning, and others.[4] Exhibit K and the Agricultural Lands Assessment also describes the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[5]

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[1] *See* Idaho Power Company's Response to Staff's Data Request No. 26 (summarizing the EFSC Application exhibits and the impacts discussed therein).
[2] ASC, Exhibit X at X-9 through X-54.
[3] EFSC, Final Order at 699 through 700, provided in the Company's Supplement to its Petition for Certificate of Public Convenience and Necessity.
[4] EFSC Final Order, Attachment K-1, Amendment Agricultural Lands Assessment at 16 through 35 (describing the potential impacts) and EFSC Application, Exhibit K, Table K-2 (showing the acres of potential temporary and permanent impacts to agricultural lands).
[5] EFSC Final Order, Attachment K-1, Amendment Agricultural Lands Assessment at 35 through 42; *see also* EFSC Application, Exhibit K at K-29 through 32.

- Exhibit K and the Right-of-Way Clearing Assessment, Forestry Practices – Exhibit K and the Right-of-Way Clearing Assessment describe the potential impacts of the Project on forestry practices, including indirect impacts on adjacent landowners, including: there may be some loss in tree volume along the new edges of the power line corridor; the risk of wildfire may be increased; new roads may allow access to more area for authorized and unauthorized users of the land.[6] The Right-of-Way Clearing Assessment also describes the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[7]
- Exhibits P1, P2, and P3 – Exhibits P1, P2, and P3 describe the potential impacts to fish and wildlife habitat, including indirect impacts from vegetation clearing activities and vehicle traffic that may impact properties adjacent to, but not directly impacted, by the B2H Project.[8] Exhibits P1, P2, and P3 also explain the measures Idaho Power will take to avoid, minimize, and mitigate such risks.[9] The EFSC concluded—taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to fish and wildlife habitat.[10]
- Exhibit R, Scenic Resources – Exhibit R addresses the potential visual impact on certain scenic or important resources, regardless of their adjacency to the Project.[11] The EFSC concluded—taking into account the various avoidance, minimization, and mitigation measures—the B2H Project would not likely result in a significant adverse impact to any scenic resources.[12]

[6] EFSC Final Order, Attachment K-2, Right-of-Way Clearing Assessment at 13 through 15; EFSC Application, Exhibit K at K-41 through K-43.
[7] EFSC Final Order, Attachment K-2, Right-of-Way Clearing Assessment at 16 through 21.
[8] See, e.g., ASC, Exhibit P1 at P1-41 through P1-86.
[9] See, e.g., ASC, Exhibit P1 at P1-86 through P1-89.
[10] EFSC, Final Order at 402, provided in the Company's Supplement to its Petition for Certificate of Public Convenience and Necessity.
[11] ASC, Exhibit R, Table L-1 (providing a list of relevant scenic resources identified as significant or important) and R-48 through R-117 (describing the impacts to the identified scenic resources).
[12] EFSC, Final Order at 464 through 465, provided in the Company's Supplement to its Petition for Certificate of Public Convenience and Necessity.

Topic or Keyword: B2H Background, Outreach and Permitting Processes

STAFF'S DATA REQUEST NO. 28:

Has Idaho Power evaluated costs and benefits of marginally shifting the proposed B2H transmission line? If so, please explain.

IDAHO POWER COMPANY'S RESPONSE TO STAFF'S DATA REQUEST NO. 28:

On November 9, 2022, the Company and Commission Staff ("Staff:)") conferred regarding the scope of this request, and Staff clarified that the intent of the request is for Idaho Power to provide a discussion of any flexibility the Company may have regarding micrositing of the B2H transmission line. Idaho Power's explanation below responds accordingly:

The Oregon Energy Facility Siting Council ("EFSC") process is a standards-based process that culminates in authorization for the applicant to construct the proposed energy facility within a defined site boundary. To provide the flexibility to marginally shift (or microsite) the transmission line, Idaho Power proposed a 500-ft wide site boundary. The Right of Way ("ROW") for the majority of the single-circuit 500-kV transmission line would be up to 250 feet. In forested areas, the ROW width may extend up to 300 feet which includes vegetative maintenance and the removal of hazardous trees. In most areas, the proposed ROW width is narrower than the site boundary so Idaho Power may microsite the proposed ROW anywhere within the approved site boundary. Thus, within the site boundary, the transmission line may be marginally shifted (or microsited) with landowner approval but without further permitting approval required. Idaho Power is working with landowners to reduce impacts to their property by micrositing and adjusting project feature locations, as necessary and practicable. These adjustments are often agreed to and coordinated during right of way negotiations. Due to the varying terrain, some of the changes have a marginal cost impact (increase or decrease) but provide value to the landowner as the micrositing refinements reduce the impacts on a particular landowner.